

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
SAN JOSE DIVISION

CONFIDENTIAL – TO BE FILED UNDER SEAL  
SUBJECT TO PROTECTIVE ORDER

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IN RE: HIGH-TECH EMPLOYEES ANTITRUST  
LITIGATION

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No. 11-CV-2509-LHK

THIS DOCUMENT RELATES TO:

ALL ACTIONS

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EXPERT REPORT OF EDWARD E. LEAMER, PH.D.

October 1, 2012

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## I. Experience and Qualifications

1. I am the Chauncey J. Medberry Professor of Management, Professor of Economics and Professor of Statistics at the University of California at Los Angeles. I earned a B.A. degree in Mathematics from Princeton University in 1966, and a Masters in Mathematics and a Ph.D. degree in Economics at the University of Michigan in 1970. I was an Assistant and Associate Professor of Economics at Harvard University from 1970 to 1975, and joined the Economics Department at UCLA in 1975 as a Full Professor. I served as Chair of the Department of Economics from 1983 to 1987 and Area Head of Business Economics from 1990 to 1993. I had a tenured appointment in the Economics Department at Yale University in 1995 and I have been a Visiting Professor at several universities, including the University of Chicago. I have been a Guest Professor at the University of Basel in Switzerland, at the Central European University in Prague, Czech Republic, at the Institute for Advanced Studies in Vienna, Austria, and at the Universidad de San Andreas in Buenos Aires, Argentina. I have served as the Director of the UCLA Anderson Forecast since 2000 and Chief Economist of the Ceridian-UCLA Pulse of Commerce Index from 2010-2012.
2. I have published extensively in the fields of econometric methodology and statistical analysis, in international economics, and in macro-economic forecasting. I have written five books and over 90 academic articles, many of which deal with the subject of inferences that may appropriately be drawn from non-experimental data. My academic research in econometrics and international economics has been profiled in **New Horizons in Economic Thought, Appraisals of Leading Economists**, edited by Warren Samuels. My papers in econometrics have been republished in a volume in the Edward Elgar Series: **Economists of the 20th Century**. My research has been funded by the National Science Foundation, the Ford Foundation, the Sloan Foundation, and the Russell Sage Foundation.
3. I am an elected Fellow of two of the most important honorific societies in my field: the American Academy of Arts and Sciences and the Econometric Society. I have been a consultant for the Federal Reserve Board of Governors, the

Department of Labor, the Department of Energy, the International Monetary Fund, the World Bank, the Inter-American Development Bank, and the Treasury of New Zealand. I have been a visiting scholar with the Federal Reserve Board and the International Monetary Fund. I have served as an expert in a variety of matters dealing with issues of interpretation of data.

4. My curriculum vita is incorporated in this report as **Exhibit 1**. My testimonial experience is incorporated in this report as **Exhibit 2**. My hourly rate for time spent working on this matter is \$650.
5. I have in this report relied on the best information available to me at the time of its preparation. A list of documents on which I relied in the preparation of this report is provided in **Exhibit 3**. I understand that discovery in this matter is ongoing and that Defendants or third parties may produce additional information that has a bearing on my analysis. I reserve the right to supplement or amend my conclusions as necessary in light of such additional information.

## **II. Introduction, Assignment, and Summary of Conclusions**

6. The defendants in this matter are a group of well-known high-tech firms, namely Adobe, Apple, Google, Intel, Intuit, Lucasfilm, and Pixar (“Defendants”).<sup>1</sup>
7. The Plaintiffs’ Amended Complaint<sup>2</sup> alleges that the Defendants agreed to limit or eliminate competition for workers amongst each other by refraining from

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<sup>1</sup> Adobe Systems Inc. (“Adobe”) is a Delaware corporation with its principal place of business located at 345 Park Avenue, San Jose, California 95110, Apple Inc. (“Apple”) is a California corporation with its principal place of business located at 1 Infinite Loop, Cupertino, California 95014, Google Inc. (“Google”) is a Delaware corporation with its principal place of business located at 1600 Amphitheatre Parkway, Mountain View, California 94043, Intel Corp. (“Intel”) is a Delaware corporation with its principal place of business located at 2200 Mission College Boulevard, Santa Clara, California 95054, Intuit Inc. (“Intuit”) is a Delaware corporation with its principal place of business located at 2632 Marine Way, Mountain View, California 94043, Lucasfilm Ltd. (“Lucasfilm”) is a California corporation with its principal place of business located at 1110 Gorgas Ave., in San Francisco, California 94129, and Pixar is a California corporation with its principal place of business located at 1200 Park Avenue, Emeryville, California 94608.

<sup>2</sup> Re: High-Tech Employee Antitrust Litigation, Consolidated Amended Complaint, September 2, 2011 (Consolidated Amended Complaint).

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contacting each others' employees to explore job offers ("Cold-Calling"<sup>3</sup>), limiting their actions in negotiating with their workers, and other restrictions. This was accomplished by means of a collection of express bilateral agreements among the Defendants. I will refer to these agreements, individually and collectively, as the "Non-Compete Agreements," or as the "Agreements."

8. I understand that the Plaintiffs are seeking certification of the following class of employees (the "All-Salaried Employee Class," or, the "All-Employee Class"):

All natural persons employed on a salaried basis ("salaried employees") in the United States by one or more of the following: (a) Apple from May 2005 through December 2009; (b) Adobe from May 2005 through December 2009; (c) Google from March 2005 through December 2009; (d) Intel from March 2005 through December 2009; (e) Intuit from June 2007 through December 2009; (f) Lucasfilm from January 2005 through December 2009; or (g) Pixar from January 2005 through December 2009. Excluded from the All-Employee Class are: retail employees; corporate officers, members of the boards of directors, and senior executives of all Defendants.

9. I also understand that the Plaintiffs are seeking certification, in the alternative, of the following alternate class of employees (the "Technical, Creative, and Research & Development Class," or, the "Technical Employee Class"):

All natural persons employed on a salaried basis who work in the creative, research & development, and/or technical fields,<sup>4</sup> in the United States by one or more of the following: (a) Apple from May 2005 through December 2009; (b) Adobe from May 2005 through December 2009; (c) Google from March 2005 through December 2009; (d) Intel from March 2005 through December 2009; (e) Intuit

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<sup>3</sup> "Cold-Calling" refers to communicating directly in any manner (including orally, in writing, telephonically, or electronically) with another firm's employee who has not otherwise applied for a job opening.

<sup>4</sup> See Appendix B for a description of how I determined the members of the Technical and Creative Alternate Class.

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from June 2007 through December 2009; (f) Lucasfilm from January 2005 through December 2009; or (g) Pixar from January 2005 through December 2009. Excluded from the Technical Employee Class are: retail employees; corporate officers, members of the boards of directors, and senior executives of all Defendants.

10. I have been asked to analyze the following questions with regard to the All-Employee Class and Technical Employee Class defined above:

- (a) Is there proof common to each proposed class capable of showing that the Non-Compete Agreements artificially reduced the competition of its members? In order to answer this question, I have been asked to evaluate whether evidence common to each class is capable of showing that the Non-Compete Agreements artificially reduced the compensation of: (i) members of each class generally; and (ii) all or most members of each class?
- (b) Is there a reliable Class-wide or formulaic method capable of quantifying the amount of suppressed compensation suffered by each class?

11. Based upon my work to date, I have reached the following conclusions:

- (a) There is evidence common to the All-Employee Class and Technical Employee Class, respectively, capable of showing that the Non-Compete Agreements systematically reduced the compensation of the members of each class. Specifically, and as explained in the body of this report, I have concluded that evidence and economic analyses applicable to each class as a whole are capable of showing that compensation to the All-Employee Class and Technical Employee Class was artificially suppressed generally due to the Non-Compete Agreements.

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(b) Classwide evidence capable of showing artificial generalized compensation suppression due to the agreements falls into three categories: (1) **labor economic studies and theory** explaining that by reducing or eliminating Cold-Calling and other active competition over employees, the Agreements were likely to have depressed compensation because they impair information flow about compensation and job offers, reduce negotiating leverage of employees, and minimize movement of employees between firms; (2) **documents from Defendants' files** [REDACTED] and (3) **multiple regression analyses**, utilizing Defendants' internal compensation and other data, showing that the Agreements artificially suppressed compensation at each Defendant.

(c) I have further found that evidence and economic analysis applicable to each class as a whole are capable of showing that all or nearly all members of the All-Employee Class and Technical Employee Class had their compensation suppressed due to the Agreements. Such classwide evidence falls into three categories: (1) economic studies and theory, especially regarding the interest of firms in preserving "internal equity," demonstrating that the adverse effects on compensation due to a poaching ban would be felt not just by those who would have been poached, but by employees more generally due to the needs of firms to maintain a salary structure; (2) documentary evidence [REDACTED]

[REDACTED], as well as other documentary evidence; and (3) statistical evidence, [REDACTED]

What this analysis means is that any generalized suppression of compensation due to the Agreements

would be experienced by all or nearly all members of the All-Employee Class and Technical Employee Class.

(d) Finally, I have concluded that standard economic methods are capable of reliably quantifying the aggregate amount of reduced compensation caused by the Agreements to the All-Employee Class and Technical Employee Class, respectively.

12. The analyses described in this report are performed for the purpose of demonstrating the availability of proof and statistical methodologies common to members of the All-Employee Class and the Technical Employee Class capable of showing that members of each class suffered suppressed compensation due to the Agreements, and capable of quantifying that harm. I understand that discovery has not yet been completed and that further evidence might emerge that is relevant to my analysis. I reserve the right to consider any such evidence and its impact, if any, on the analysis I have proposed.

### **III. Case and Background**

#### **A. Defendants**

13. Adobe, founded in 1982, is a technology company with its headquarters in San Jose, California.<sup>5</sup> Adobe is well known for a number of software products including Acrobat, Photoshop, and Illustrator. It is also known for its Flash media platform which it acquired in late 2005 as part of its acquisition of Macromedia, which had been the publisher of Dreamweaver and the Flash media platform.<sup>6</sup> In its 2009 fiscal year, Adobe had nearly \$3 billion in revenues.<sup>7</sup>

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<sup>5</sup> Adobe, "Corporate Overview," <http://www.adobe.com/aboutadobe/pressroom/pdfs/profile.pdf>.

<sup>6</sup> Adobe, "Adobe completes acquisition of Macromedia," [http://www.adobe.com/aboutadobe/invrelations/adobeandmacromedia\\_faq.html](http://www.adobe.com/aboutadobe/invrelations/adobeandmacromedia_faq.html).

<sup>7</sup> Adobe Systems Incorporated, "2009 Form 10-K," January 22, 2010 at pp.52.

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14. Apple, founded in 1976, is a technology company that is headquartered in Cupertino, California.<sup>8</sup> The company is a market leader in several consumer electronics market segments with its iPad, iPhone, and iPod product lines.<sup>9</sup> Apple has been a leader in the digital music distribution market with its iTunes service.<sup>10</sup> Apple's 2011 total revenues exceeded \$108 billion.<sup>11</sup>
15. Google, founded in 1998, is a technology company headquartered in Mountain View, California.<sup>12</sup> The company is the leading internet search provider.<sup>13</sup> The company went public in 2004. Google's revenues reached nearly \$38 billion in 2011.<sup>14</sup>
16. Intel is a technology company, headquartered in Santa Clara, California. The company was founded in 1968 and is the world's largest semiconductor chip maker.<sup>15</sup> Intel is most well known for its x86 series of microprocessors, found in most personal computers today<sup>16</sup> but the company also markets other integrated

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<sup>8</sup> Time, "Top 10 Apple Moments,"

[http://www.time.com/time/specials/packages/article/0,28804,1873486\\_1873491\\_1873530,00.html](http://www.time.com/time/specials/packages/article/0,28804,1873486_1873491_1873530,00.html).

<sup>9</sup> Reuters, "Company Profile for Apple Inc,"

<http://in.reuters.com/finance/stocks/companyProfile?symbol=AAPL.O>.

<sup>10</sup> Whitney, Lance, "iTunes reps 1 in every 4 songs sold in U.S," CNET News, August 18, 2009,

[http://news.cnet.com/8301-13579\\_3-10311907-37.html](http://news.cnet.com/8301-13579_3-10311907-37.html).

<sup>11</sup> Apple Inc., "2011 Form 10-K," October 26, 2011 at pp.24.

<sup>12</sup> Google, "Our history in depth," <http://www.google.com/about/company/history/>.

<sup>13</sup> Google, "Google Launches World's Largest Search Engine," June 26, 2000, McGee, Matt, "Google Still No. 1 Search Engine On Earth," Searchengineland, August 31, 2009 and Google Inc., "2010 Annual Report," February 11, 2011 at p.25.

<sup>14</sup> Google, "2012 Financial Tables – Investor Relations – Google,"

<http://investor.google.com/financial/tables.html>.

<sup>15</sup> Intel, "Intel Company Information," <http://www.intel.com/content/www/us/en/company-overview/company-facts.html>.

<sup>16</sup> Edwards, Benj, "Birth of a Standard: The Intel 8086 Microprocessor," PCWorld, June 16, 2008, [http://www.pcworld.com/article/146957-3/birth\\_of\\_a\\_standard\\_the\\_intel\\_8086\\_microprocessor.html](http://www.pcworld.com/article/146957-3/birth_of_a_standard_the_intel_8086_microprocessor.html).

circuits and devices related to communications and computing.<sup>17</sup> Intel had revenue of \$54 billion in 2011.<sup>18</sup>

17. Intuit is a technology company, headquartered in Mountain View, California.<sup>19</sup> The company was founded in 1983 and is known for its QuickBooks, Quicken and TurboTax software products. In 2011 the company revenues exceeded \$3.8 billion.
18. Lucasfilm is a film production company known for its computer animation expertise, headquartered in San Francisco, California. Founded in 1971, the company is best known for producing the Star Wars films, as well as other box office hits, including the Indiana Jones franchise. Lucasfilm has seven different divisions: Industrial Light & Magic, LucasArts, Lucasfilm Animation, Skywalker Sound, Lucas Licensing, Lucas Online and Lucasfilm Singapore. Lucasfilm Animation has studios both in Marin County, California and Singapore.
19. Pixar is a computer animation film studio headquartered in Emeryville, California.<sup>20</sup> The company was founded in 1979 as Graphics Group and later renamed to Pixar in 1986.<sup>21</sup> In 2006 the company was acquired by Disney for approximately \$7.4 billion.<sup>22</sup> Prior to the acquisition, in 2005 Pixar had annual revenues of nearly \$290 million.<sup>23</sup>

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<sup>17</sup> Intel, "Intel Products," [http://www.intel.com/p/en\\_US/products/productsbyintel](http://www.intel.com/p/en_US/products/productsbyintel).

<sup>18</sup> Intel Corporation, "2011 Annual Report," February 23, 2012 at p.2.

<sup>19</sup> Intuit, "Intuit: Corporate Profile," [http://about.intuit.com/about\\_intuit/profile/](http://about.intuit.com/about_intuit/profile/).

<sup>20</sup> Pixar, "Pixar: Welcome," <http://www.pixar.com/about>.

<sup>21</sup> Pixar, "Pixar History: 1986," <http://www.pixar.com/about/Our-Story>.

<sup>22</sup> Pixar, "Pixar History: 2006," <http://www.pixar.com/about/Our-Story> and "Disney buying Pixar for \$7.4 billion," NBC News, 1/25/2006, [http://www.msnbc.msn.com/id/11003466/ns/business-us\\_business/t/disney-buying-pixar-billion](http://www.msnbc.msn.com/id/11003466/ns/business-us_business/t/disney-buying-pixar-billion).

<sup>23</sup> Pixar, "2005 10-K," March 7, 2006 at p.37.

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## B. The Non-Compete Agreements

20. I have studied the allegations of the Plaintiffs' complaint and evidence of the Non-Compete Agreements. I have not been asked to form an opinion on the ultimate question of whether or not the Defendants reached anticompetitive agreements or should be liable under the law. However, I have reviewed evidence about the agreements and their enforcement to understand their scope and duration for purposes of my analysis, and to assure myself that certain assumptions I have made fit the circumstances.

21. Based on that review, I understand the time periods of the alleged Non-Compete Agreements to have been as follows.

**Figure 1: Periods of the Alleged Collusive Agreements**

Defendants (1)	Start Date <sup>24</sup> (2)	End Date <sup>25</sup> (3)
[REDACTED]	[REDACTED]	March 2009

22.

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>25</sup> These dates are based on the notice send to a party to the alleged agreement. I understand that Apple and Google each received a Civil Investigative Demand ("CID") on March 13, 2009. Pixar received a CID on May 27, 2009.

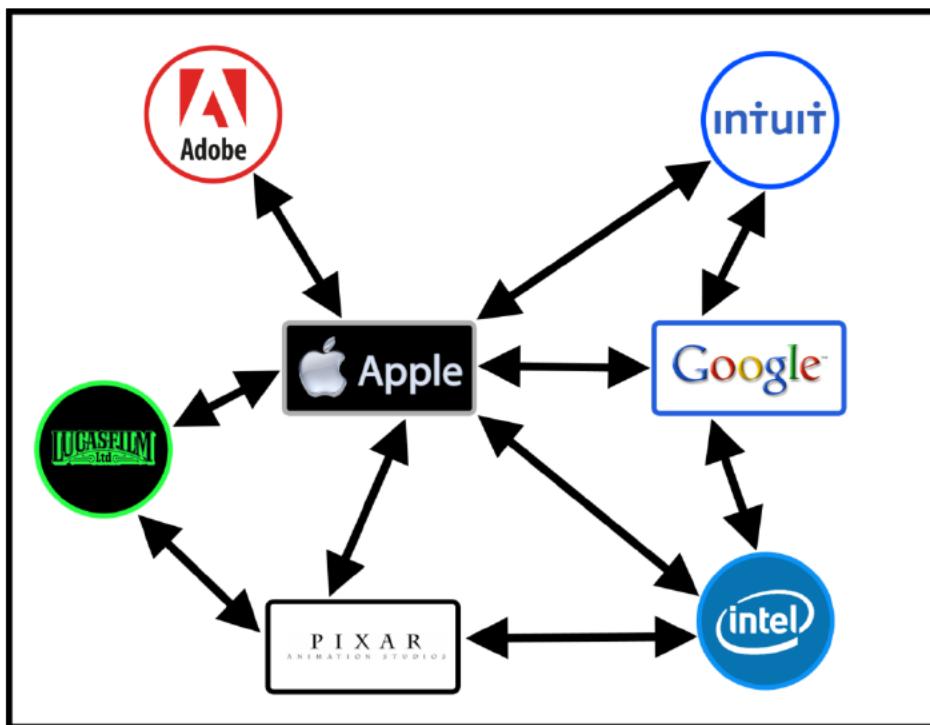
[REDACTED]

[REDACTED]

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**Figure 2: Relationships of the Alleged Agreements Among Defendants**



23.

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- [REDACTED]
- [REDACTED]
- [REDACTED]

24. The sections below describe each of the agreements among the seven Defendants as I understand them.

---

- [REDACTED]

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**1. Pixar-Lucasfilm**

25. I understand that [REDACTED]

[REDACTED]

26.

[REDACTED]

27.

[REDACTED]

---

[REDACTED]

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28.

29.

30.

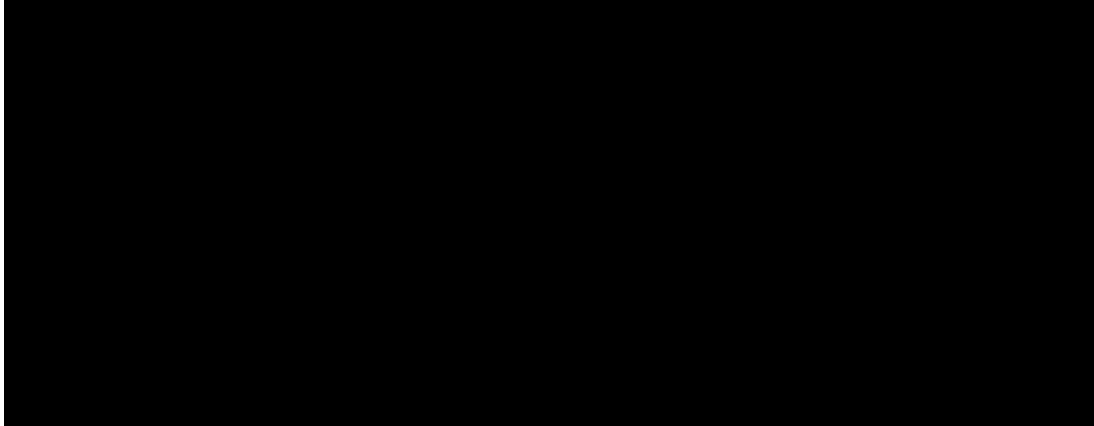
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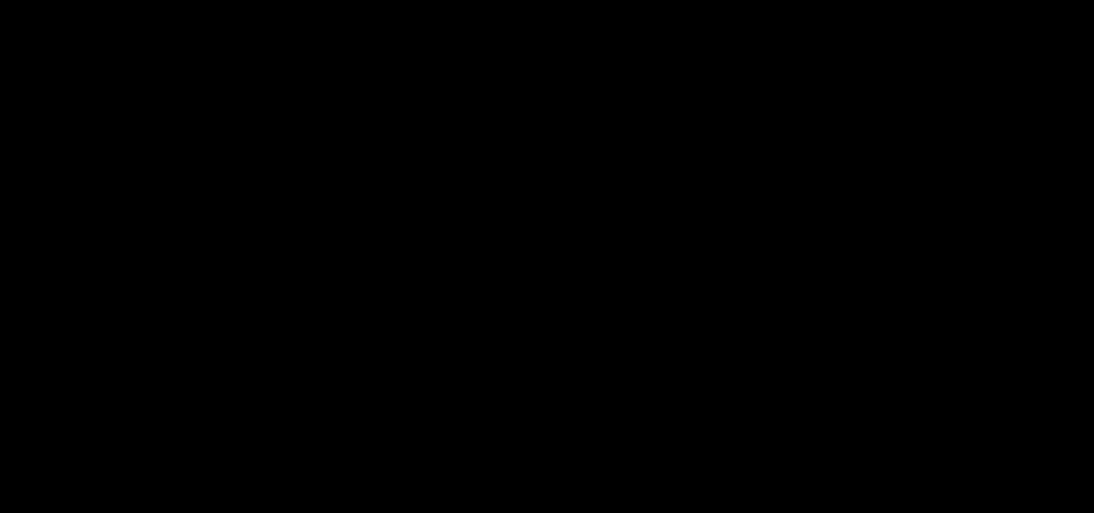
***2. The Apple Non-Compete Agreements***

a. Adobe

31.



32.



---

- [REDACTED]

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33. [REDACTED]

34. [REDACTED]

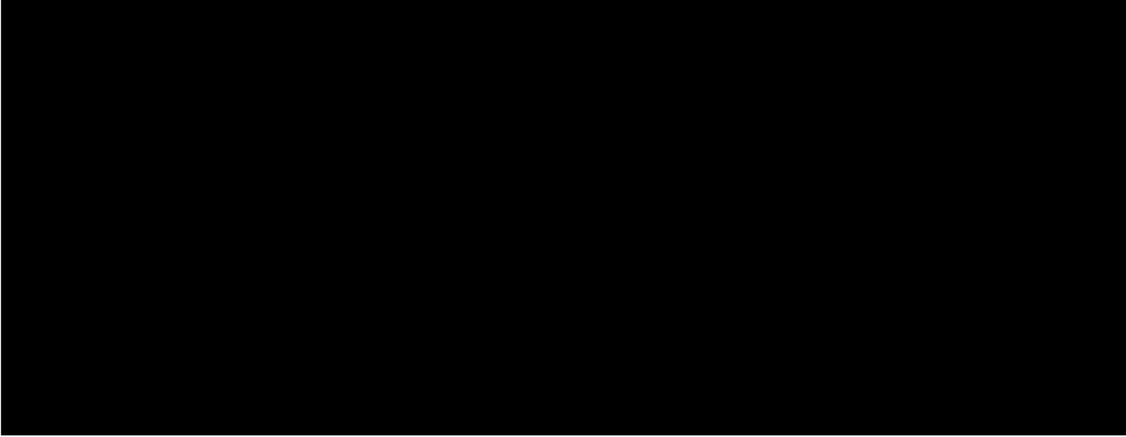
b. Google

35. I understand that [REDACTED]

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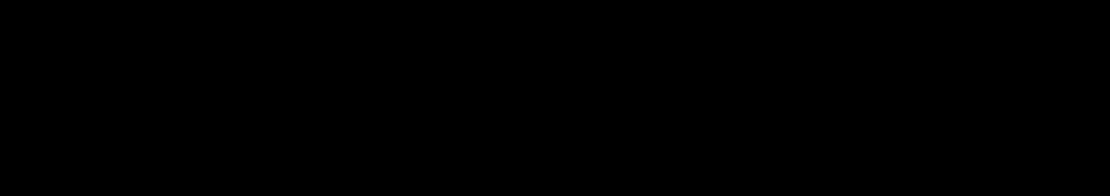
36.



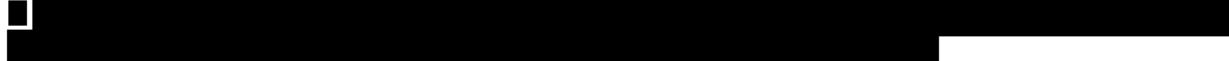
37.



38.



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39. I have reviewed [REDACTED]  
[REDACTED]  
[REDACTED]

c. Pixar

40. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

41. I understand that [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

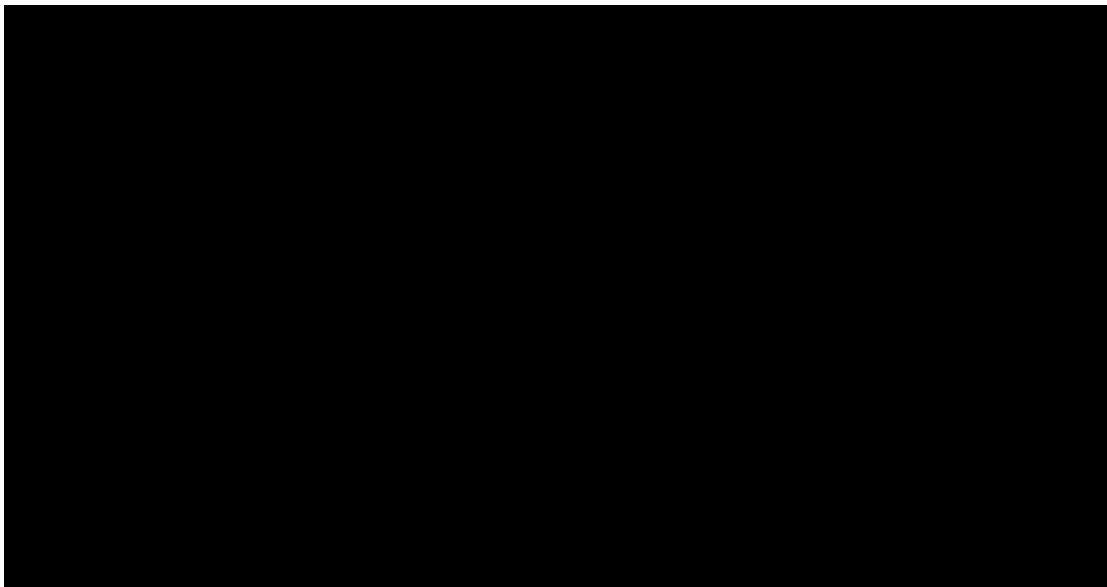
42. [REDACTED]  
[REDACTED]

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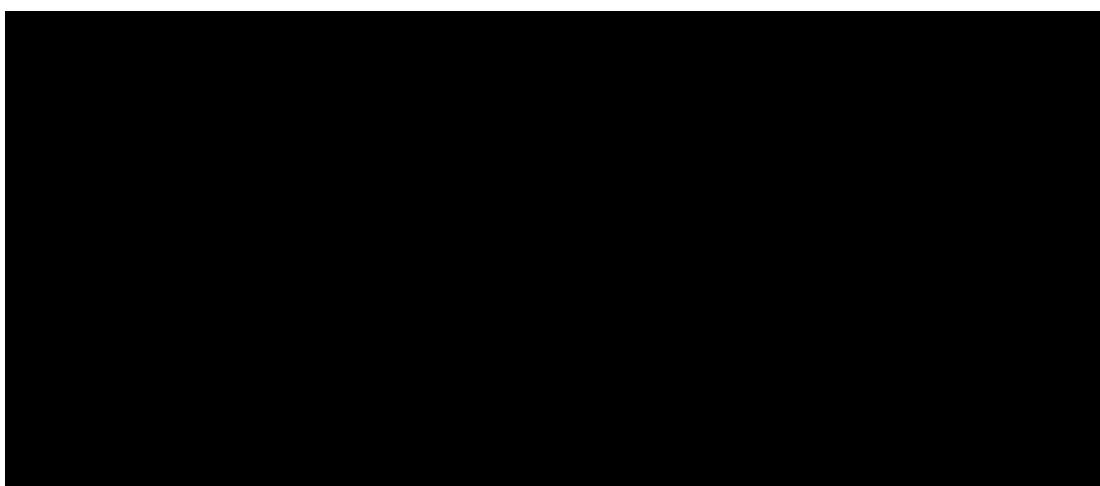
[REDACTED]  
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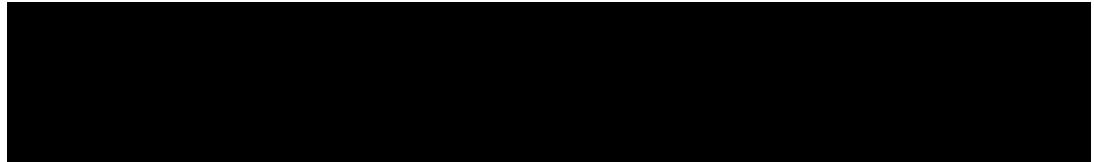
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43.



44.



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[REDACTED]

***3. The Google Non-Compete Agreements***

a. Apple

45.

b. Intel

46.

---

■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED] 76614DOC010212 [REDACTED]  
■ [REDACTED]  
■ [REDACTED]

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47.

[REDACTED] On June 4, 2007, Eric Schmidt wrote Otellini re "hiring": "I checked as to our recruiting policy with Intel. 'Intel has been listed on the Do Not Call List since the policy was created. No one in staffing directly calls, networks, or emails into the company or its subsidiaries looking for talent.' Hopefully there are no exceptions to this policy and if you become aware of this please let me know immediately!"<sup>83</sup>

[REDACTED]

[REDACTED]

48.

[REDACTED]

[REDACTED]

[REDACTED]

49.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>83</sup> See 76614DOC010212.

[REDACTED]

[REDACTED]

[REDACTED]

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c. Intuit

50.

Term	Percentage
Climate change	100
Global warming	98
Green energy	95
Carbon footprint	92
Sustainable development	88
Renewable energy	85
Emissions reduction	82
Green economy	78
Carbon tax	75
Carbon pricing	95

51.

Term	Percentage
Climate change	100
Global warming	98
Green energy	95
Carbon footprint	92
Sustainable development	88
Renewable energy	85
Emissions reduction	82
Carbon tax	78
Green economy	75
Carbon pricing	95

52.

I have reviewed [REDACTED]  
[REDACTED]

Term	Percentage
GMOs	~10%
Organic	~75%
Natural	~70%
Artificial	~15%
Organic	~75%
Natural	~70%
Artificial	~15%
Organic	~75%
Natural	~70%
Artificial	~15%
Organic	~75%
Natural	~70%
Artificial	~15%
Organic	~75%
Natural	~70%
Artificial	~15%

***4. Department of Justice Investigation and the End of the Collusion***

53. On June 3, 2009, the New York Times published an article indicating that the DOJ had begun an investigation into the Defendants' hiring practices and the alleged Non-Compete Agreements in particular.<sup>92</sup> I understand that by the end of March 2009, the DOJ had informed the defendants of the investigation. I have assumed for this analysis that, as of that date the agreements between the defendants ceased to have an effect on their recruiting and hiring activities.

**C. Named Plaintiffs**

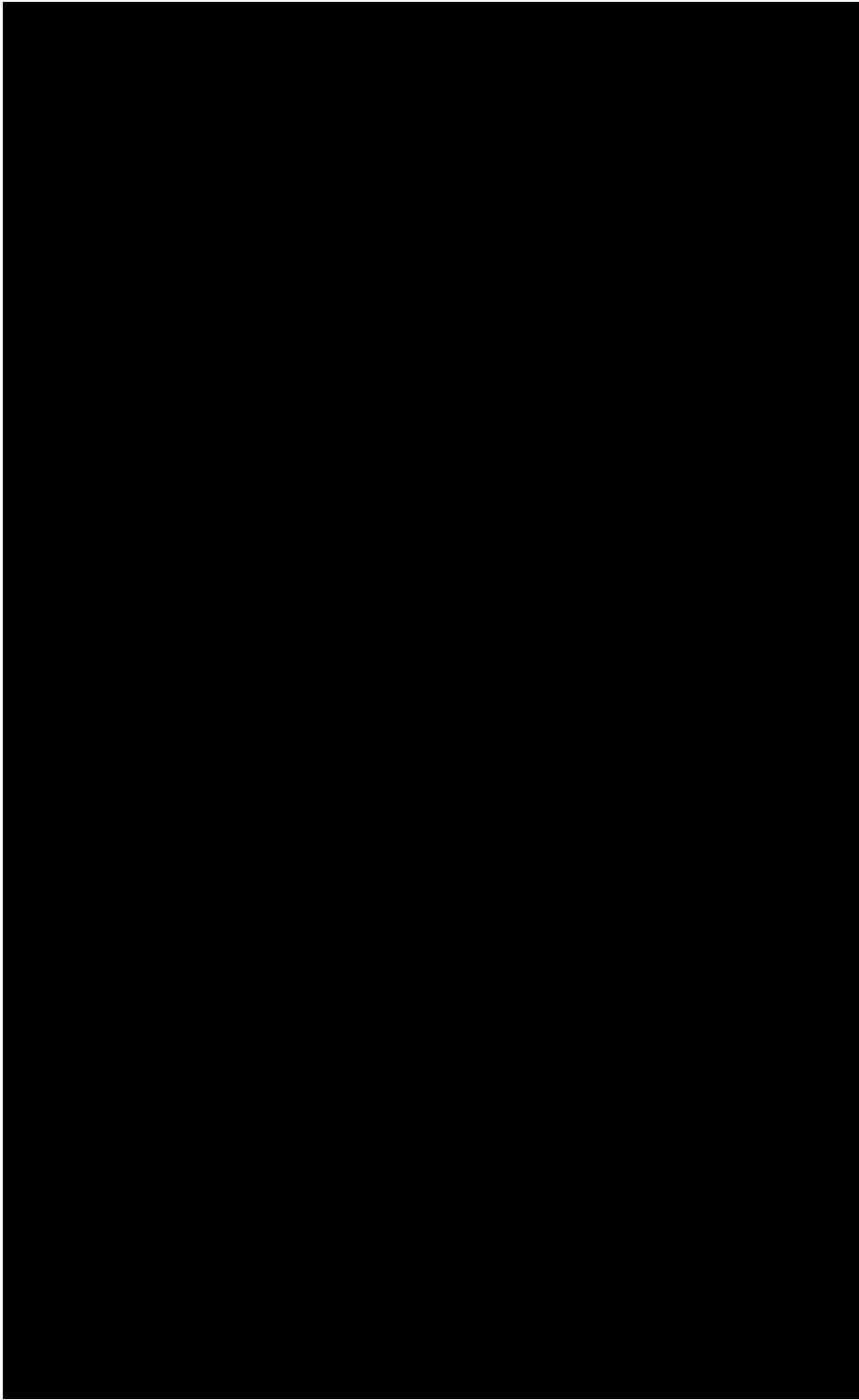
54. As described above, I have been asked to consider the effect of the Non-Compete Agreements on the All-Employee Class of salaried employees (and the Technical Employee Class). The members of each proposed class worked for a Defendant at a time when that Defendant was a party to at least one such Agreement (excluding retail employees, corporate officers, members of the boards of directors, and senior executives).

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<sup>92</sup> Helft, Miguel, "Unwritten Code Rules Silicon Valley Hiring," The New York Times, June 3, 2009, [http://www.nytimes.com/2009/06/04/technology/companies/04trust.html?\\_r=1](http://www.nytimes.com/2009/06/04/technology/companies/04trust.html?_r=1).

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55. I understand the following named plaintiffs are seeking to serve as class representatives for the proposed All-Employee Class or Technical Employee Class :

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- a. Michael Devine who worked for Adobe from October 2006 through July 7, 2008 as a computer scientist for Adobe Systems;
- b. Mark Fichtner who worked for Intel as a software engineer from May of 2008 through May 2011;
- c. Siddharth Hariharan who worked for Lucasfilm as a software engineer from January 8, 2007 through August 15, 2008;
- d. Brandon Marshall, who worked for Adobe as a software production quality specialist from July 2006 through December 2006; and
- e. Daniel Stover, who worked for Intuit as a Web Marketing Representative, Web Developer, and Software Engineer from July 2006 through December 2010.

56. I have [REDACTED]  
[REDACTED]  
[REDACTED]

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[REDACTED]

**D. Background on Defendants' Recruiting and Hiring Practices**

57.

[REDACTED]

\_\_\_\_\_

[REDACTED]

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[REDACTED]

[REDACTED]

58. [REDACTED]

[REDACTED]

[REDACTED]

59. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

60. [REDACTED]

[REDACTED]

61. [REDACTED]

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[REDACTED]

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62.

- [REDACTED]
- [REDACTED]
- [REDACTED]
- Hiring employees away from competitors deprives rivals of valuable assets.

---

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Some employers may have failed to anticipate improvements in market conditions and may have left valuable employees with compensation packages far below what they could get elsewhere. This can create clusters of low-hanging fruit.

#### **IV. Common Evidence and Analysis Are Capable of Showing that the Non-Compete Agreements Artificially Reduced the Compensation of Defendants' Salaried Employees**

63. Methods and evidence, common to each Class as a whole, are capable of demonstrating that the Non-Compete Agreements reduced the compensation of All-Employee Class and Technical Employee Class members employed by the Defendants. This Class-wide proof of impact comes in two steps. First, there is abundant evidence, common to All-Employee Class and Technical Employee Class members, capable of showing that the Non-Compete Agreement suppressed the compensation of the members of the All-Employee Class and Technical Employee Class, generally. Such Class-wide methods and evidence include, without limitation: (a) standard economic theory regarding the effects of information asymmetries on labor market contracts, which work to the disadvantage of the less informed party, and (b) standard economic theory regarding the effects of movement of employees between firms enticed by better compensation, and the consequent interest of firms in peremptory increases in compensation to employees when poaching by key rivals occurs regularly; (c) multiple regression analyses, using extensive compensation data, showing that compensation was reduced for Class and Technical Employee Class members; and (d) documentary evidence, [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

64. I have found further that Class-wide methods and evidence are capable of demonstrating that the Non-Compete Agreements suppressed the compensation of all or virtually all members of the All-Employee Class and Technical Employee Class. In addition to the Class-wide evidence described in

the previous paragraph, such common proof that the effects of the Non-Compete Agreements was broadly felt also includes (a) economic theory regarding the interest of firms in fostering a concept known in the economic literature as “internal equity,” such that compensation tracks the success of the firm’s most highly compensated employees; (b) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

65. I describe these methods and evidence in greater detail below.

**A. Class-wide Evidence is Capable of Showing that the Non-Compete Agreements Suppressed Compensation Generally**

**1. *Economic Theory Offers a Classwide Basis for Linking Non-Compete Agreements to Suppressed Compensation Incurred by Members of the All-Employee Class and Technical Employee Class***

66. There are three economic frameworks<sup>106</sup> that are particularly useful for evaluating the likely impact on employees of illegal agreements to suppress Cold-Calling. These frameworks--each well-accepted in the economics literature--explain various mechanisms by which anti-Cold-Calling agreements can suppress worker compensation generally.

67. The frameworks for considering the effect of the alleged non-compete agreements discussed below are (1) price discovery, (2) worker compensation equity and (3) profit-sharing. Each framework has different implications regarding the way in which the effects are spread across firms, across job

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<sup>106</sup> “Frameworks” refers to general views regarding how labor markets function and “model” refers to a specific example of a framework. A framework is usually communicated in words, while a model is expressed with either graphs or mathematical formulae.

categories within firms and across time. The frameworks are not mutually exclusive in that effects of the Agreements can arise through multiple channels. In this section, I will focus here on frameworks “(1)” and “(3)” as they pertain mainly to the general linkage between the Non-Compete Agreements and suppressed compensation. I will elaborate on framework “(2)” regarding internal equity when I discuss the Class-wide evidence capable of showing widespread harm to the either class later in my Report.

68. For all three frameworks, Cold-Calling is part of the information gathering that reveals the nature of outside opportunities both to workers and to employers. Anti-Cold-Calling agreements suppress compensation by limiting this flow of information about attractive outside opportunities.
69. Cold-Calling is an especially important source of information about outside opportunities under two circumstances: (a) uneven growth (i.e., firms are growing at different rates), which requires reallocation of the workforce in favor of the firms which can offer workers the best contracts, and (b) even growth (firms are growing at a generally equal rate), which doesn’t necessitate any reallocation of the workforce but which creates greater competition for the scarce workforce.
70. Under either condition, Cold-Calling contributes to economic efficiency. With uneven growth, Cold-Calling helps to assure that workers are assigned to their most valued tasks. With even growth, Cold-Calling helps to assure that workers receive a proper scarcity premium which signals to other workers which skills are most needed. In both circumstances, economic theory predicts that agreements restricting Cold-Calling would suppress worker compensation for all or nearly all employees of the Defendants who agreed to them.

#### a. Price Discovery Framework

71. The market equilibrium models that economists often use presume that market forces are powerful enough and work rapidly enough that virtually all transactions occur at approximately the same price – the “market price” which equilibrates supply and demand. In reality, in the face of changed market conditions, the actual transactions’ prices can deviate from the market

equilibrium sometimes by large amounts for long periods of time. The process by which actual transaction prices move to market equilibrium values is called “market price discovery.”

72. The speed at which the price discovery process operates is determined by the frequency at which buyers and sellers get together to haggle over the price, and by the rate at which information about the outcomes of those bargains, consummated or not, is dispersed among other potential buyers and sellers. Non-Compete Agreements that limit the bargaining between employers and employees thus slow down the price discovery process and affect each and every labor contract in the markets.
73. In some settings the price discovery process is so slow and imperfect that the concept of a “market equilibrium” is of limited value for understanding the sequence of actual transactions.<sup>107</sup> Labor markets that involve infrequent bargains and limited information flows can have very sluggish price discovery. High transaction costs and weak information flows create very illiquid labor services which are transferred via bilateral bargains, not via markets.<sup>108</sup> The expensive and time-consuming task of uncovering and valuing the unique features of workers slows down the price discovery process and allows many transactions to occur at prices far from market equilibrium levels.
74. High-tech jobs involve high costs for transactions including time, money and personal dislocation. These high transaction costs make transactions very infrequent and limit the number of workers actively seeking new employers.
75. The labor market also has weak information flows about specific jobs. Employees may rely mostly on “water-cooler talk” perhaps supplemented by Internet sources. Employers, on the other hand, often hire private consulting firms to provide aggregated information about “market” compensation. For

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<sup>107</sup> Stiglitz, Joseph, “Information and the Change in the Paradigm in Economics,” *The American Economic Review*, Vol.92, No. 3 (June 2002), pp. 460-501.

<sup>108</sup> For related effects in a financial context, see e.g., Green, Richard C., Dan Li and Norman Schürhoff, “Price Discovery in Illiquid Markets: Do Financial Asset Prices Rise Faster Than They Fall?,” *Journal of Finance*, Volume 65, Issue 5, pp. 1669–1702, October 2010.

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employees, Cold-Calling is an important channel of information about outside opportunities. Absent Cold-Calling, many labor contracts are negotiated in unequal bargains between informed employers and uninformed employees.

76. Agreements that reduce the number of bilateral bargains further slow the price discovery process and affect the whole sequence of actual transactions.<sup>109</sup> Non-Compete agreements do not change the value of the work; they only help employers keep more of that value.

**b. Relationship Framework: Firm-Specific Assets**

77. Net revenues of high-tech intellectual service firms accrue to one of the two assets that drive value: the “brand” (the firm) or the workers. The division of the net revenues between the firm and the workers is determined by outside competition for workers, which pressures firms to pay their workers at least as much as the best outside offer.<sup>110</sup>

78. When firm-specific knowledge assets reside within the brains of workers, the movement of workers between firms is a form of “creative destruction” meaning that the increased value of the worker at the new job is offset by destruction of value at the old. This is economically inefficient unless the value of the asset created exceeds the value of the asset destroyed. If neither party to the new employment contract is incented to worry about the destruction, there will be too much destruction, the consequence of which is too little creation. A new employer is unconcerned about the “destruction” of the previous employer’s asset, or likes it if it impairs a competitor. It is therefore essential for firms to form relationships that make workers sensitive to the asset destruction that would occur if they switched employees. This can be done by making them joint owners of the intellectual assets of the firm, through stock option plans

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<sup>109</sup> See Tappata, Mariano, “Rockets and Feathers Understanding Asymmetric Pricing,” UCLA Job Market Paper, January 2006 and Yang, Huanxing and Ye, Lixin, “Search with learning: understanding asymmetric price adjustments,” Ohio State University, August 2006.



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and restricted stock grants. These plans can help limit movement of critical workers.

79. If firms have not created adequate incentives to assure worker loyalty, Cold-Calling can seriously threaten loss of the critical intellectual assets. In periods when demand for the critical workforce is weak, firms may feel little threat of loss of workers, and may let grants of stock options and restricted stocks recede. Firms may be surprised when the market starts to heat up again and they start to lose critical workers. A legal countermeasure to limit loss of the critical workers would be increased use of stock options and restricted stock grants. Management which prefers not to share ownership with their workforce may instead choose the countermeasure of anti-Cold-Calling agreements, even if it may be illegal.
80. Economic theory therefore predicts that agreements such as the Non-Compete Agreements artificially suppress employee compensation on a widespread basis. Furthermore, evidence common to all potential class members in this case can be used to confirm this predicted effect.

***2. Defendants' Internal Documents Provide Additional Class-wide Evidence Capable of Showing that the Non-Compete Agreements Artificially Suppressed Compensation***

81. [REDACTED]

82. [REDACTED]

---

[REDACTED]

[REDACTED]

[REDACTED]

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83.

84.

Term	Percentage
GMOs	75%
Organic	70%
Natural	65%
Artificial	55%

The image consists of two main regions. On the left, there is a large, dark, irregular shape with a jagged, stepped boundary. On the right, there is a white shape with a textured, blocky pattern. A thin vertical line runs vertically through the center of the image, separating the two main regions. The overall effect is reminiscent of a high-contrast scan of a physical object or a minimalist abstract graphic.

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85. [REDACTED]

86. [REDACTED]

87. [REDACTED]

88. [REDACTED]

***3. Analysis of Defendants' Compensation Data Is Additional Class-wide Evidence Capable of Showing that the Compensation of All-Employee Class and Technical Employee Class Members Was Suppressed by the Non-Competition Agreements***

89. My analysis of Defendants' compensation data is additional common evidence capable of showing that restricting Cold-Calling would artificially suppress employee compensation by impeding the price discovery process.

90. Compensation of new recruits compared with existing employees can reveal the price discovery process at work. If compensation of current workers were close

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[REDACTED]

[REDACTED]

[REDACTED]

to a “market equilibrium” level, the new recruits would be paid similarly to existing employees, net of “moving costs.” If the market value of the workers were then to increase, that would set in motion a price discovery process during which new recruits were paid distinctly more than current employees with similar skills and experience. In the early phases of the price discovery process, the salaries of these new recruits might also be below equilibrium levels, and the compensation packages offered new recruits can improve over time in search of the higher equilibrium. As firms become aware of the increased external competition, compensation packages of current employees may be improved to bring them more in line with outside opportunities. It can take considerable time for this complicated price discovery process to find a new equilibrium in which new recruits and existing employees are paid about the same. It can take much longer if information about superior opportunities is suppressed by Non-Compete Agreements.

91. Thus, a symptom of price discovery at work would be better compensation packages for those who moved between Defendants than for those who stayed.

A series of black redacted bars of varying lengths, representing redacted text. There are approximately 10 bars, with the longest bar at the top and the shortest at the bottom.

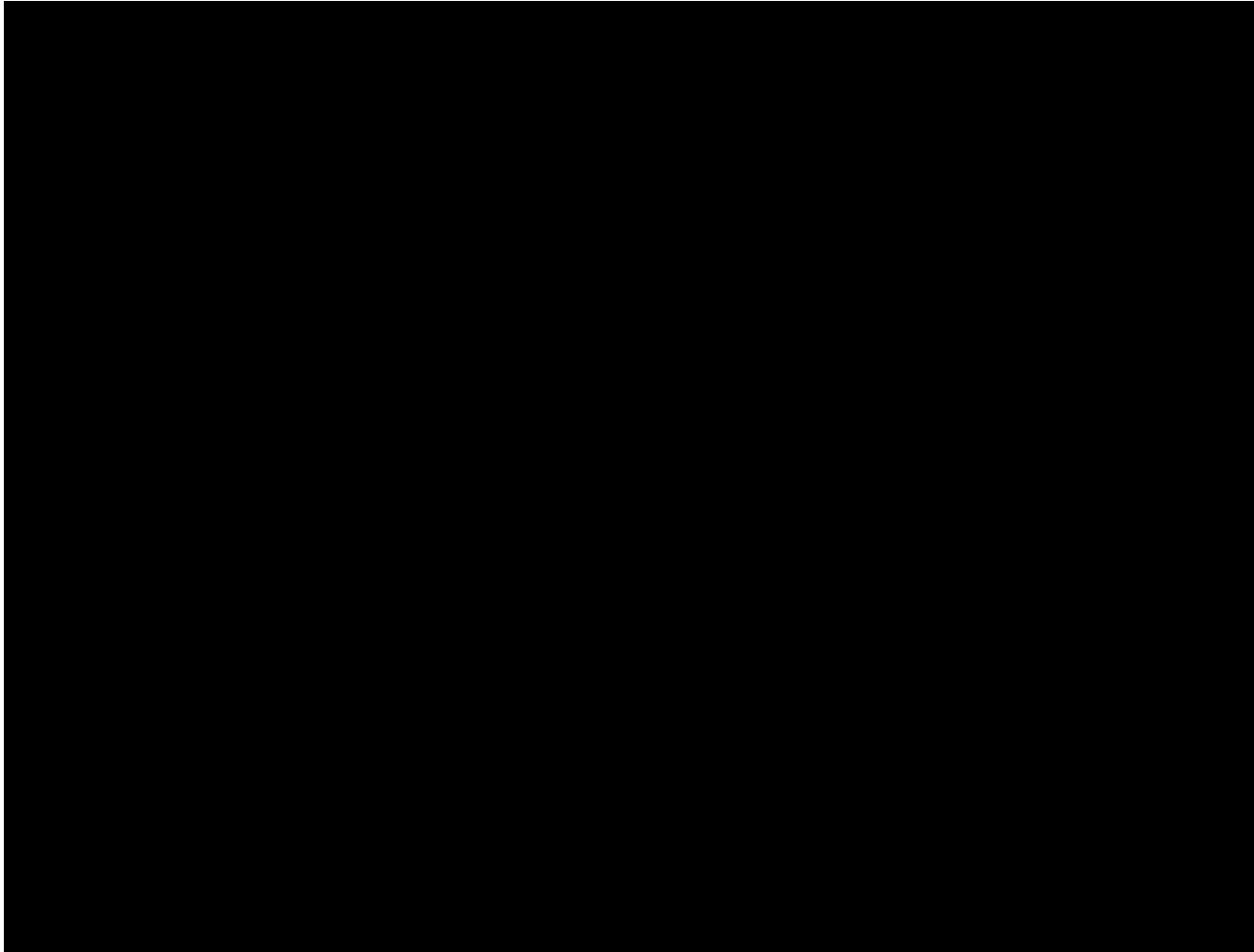
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[REDACTED]

92. [REDACTED]

[REDACTED]



93. This analysis is common evidence capable of showing that price discovery has an effect on compensation of Defendants' employees, and thus that agreements restricting recruiting of Defendant employees would tend to suppress compensation.

***4. Common Evidence Confirms that the Non-Compete Agreements Coincided with Periods of Economic Expansion that Otherwise Would Have Increased Compensation to Class Members***

94. Common evidence can also be used to demonstrate that the timing of the agreements coincided with periods of expansion that would otherwise have caused compensation of class members to rise.

95. Cold-Calling is likely to be most active during the industry expansions in which the industry overall is enjoying rapid growth and facing supply constraints of workers at every level of experience.

96. During much of the class period, the Defendants collectively were experiencing a phase of rapid economic expansion and exhibited strong financial performance. Google grew from a startup with just eight employees in 1999 to a publicly traded company with over 30,000 employees in 2012. Apple tripled its revenue between 2005 and 2010 with widespread success of its consumer electronic products including the iPhone, iPod Touch and iPad. Adobe generated about \$980 million in owner earnings in 2007, up from \$580 million and \$540 million in 2006 and 2005, respectively.<sup>118</sup> Between 1998 and 2011, Pixar released 11 blockbuster feature films resulting in more than \$6 billion at the worldwide box office.<sup>119</sup>

- ‘It’s surreal in the Valley, compared to the rest of the country,’ said Harj Taggar, a partner at startup incubator Y Combinator [in 2011]. ‘It’s so hard to hire people here – and salaries for engineers are going through the roof.’<sup>120</sup>

97. Equity distributions are especially important for retaining critical employees during expansions when many firms are actively recruiting talent. The normal vesting periods of three or four years align compensation with stock market performance, and create a loss for workers who leave. This makes them share in the loss of firm-specific knowledge assets that their departure creates. Equity grants and profit-sharing are used to promote employee loyalty and retain firm-specific knowledge assets,<sup>121</sup> as that term is understood in economic literature.

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<sup>118</sup> Ponzio, Joe, “With Adobe, Growth and Value are Joined at the Hip,” Seeking Alpha, February 4, 2008, <http://seekingalpha.com/article/62919-with-adobe-growth-and-value-are-joined-at-the-hip>.

<sup>119</sup> Pixar, “Corporate Overview,” [http://www.pixar.com/companyinfo/about\\_us/overview.htm](http://www.pixar.com/companyinfo/about_us/overview.htm) [Accessed 04/06/2012].

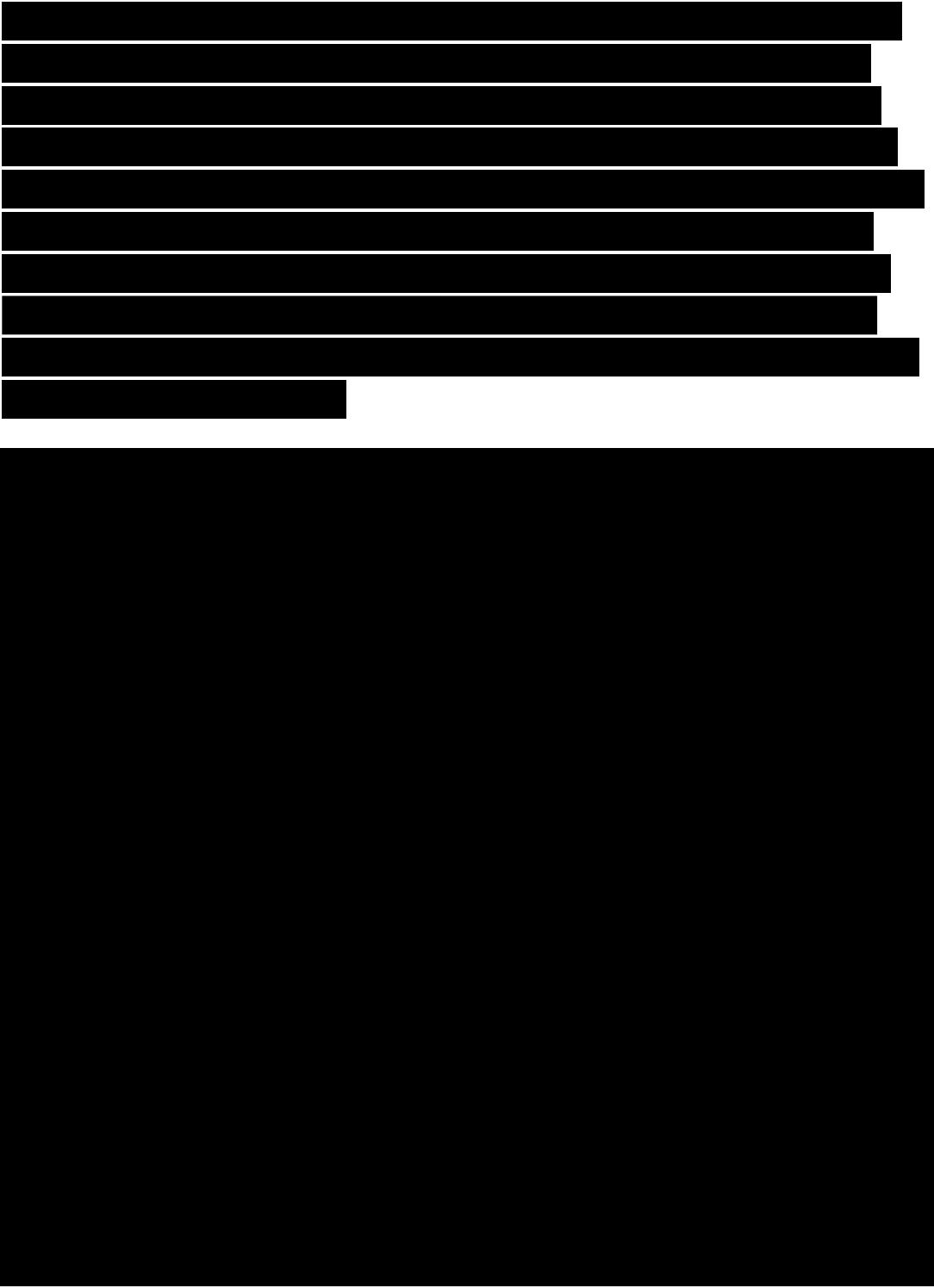
<sup>120</sup> Wagner, Alex, “As National Employment Stalls, Job Market Booms In Silicon Valley,” Huffington Post, July 8, 2011.

<sup>121</sup> See e.g., Grant, R. M., “Toward a Knowledge-Based Theory of the Firm,” *Strategic Management Journal*, 17

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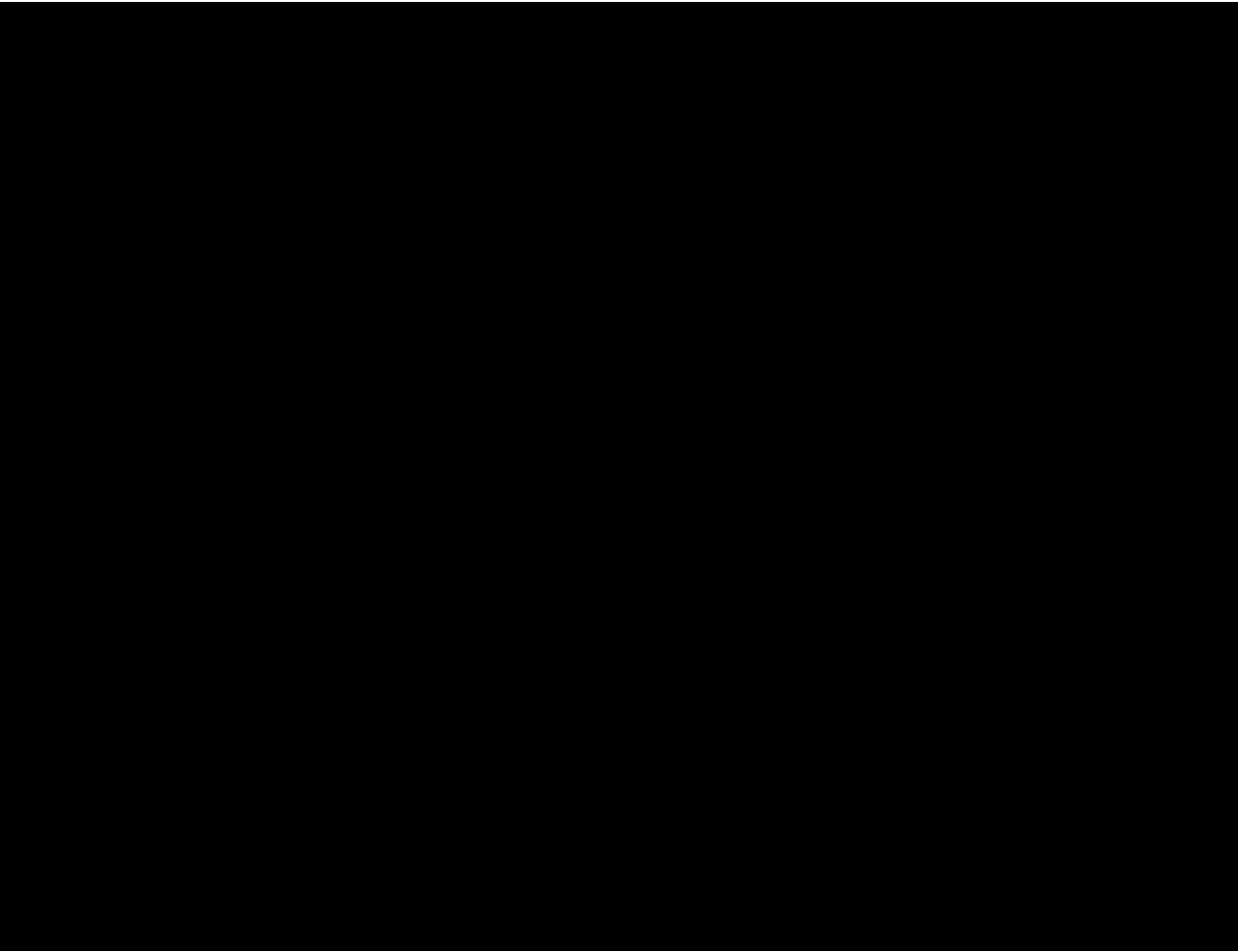
98.



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99. Revenues are required to support salary increases, and a surge in profits over time is likely to be spent partly on raising wages and retaining key employees.



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100. Following a period of industry weakness<sup>122</sup> in which the forces for increases in compensation were weak, normal market forces in 2005 and subsequently would have resulted in a distribution of some of that net revenue to the workforce. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**B. Classwide Evidence is Capable of Showing that the Non-Compete Agreements Suppressed the Compensation of All or Nearly All Members of the All-Employee Class and Technical Employee Class**

101. Common evidence can likewise be used to demonstrate that the artificial suppression of employee compensation would have been widespread, extending to all or nearly all members of the All-Employee Class and Technical Employee Class. This Class-wide evidence includes all of the evidence set forth above capable of showing the link between the Non-Compete Agreements and suppressed compensation plus three additional categories of evidence: (a) economic theory implicating firm incentives to maintain worker loyalty by adhering to principles of internal equity through a rigid salary structure; (b)

[REDACTED]

[REDACTED]

[REDACTED] and (c) multiple regression analyses [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>122</sup> Luo, Tian and Mann, Amar, "Crash and Reboot: Silicon Valley high-tech employment and wages, 2000-08," Monthly Labor Review, January 2010, p.61-65 and NOVA Workforce Board, "Silicon Valley in Transition," July 2011.

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102. One key economic framework (introduced above) is built on the concept of firms' incentives to maintain and promote worker loyalty. Although economists often refer to the labor "market," most labor services are mediated not by commodity markets but by committed long-term relationships built on trust and understanding and mutual interests. If it were literally a commodity market the compensation paid to any particular employee would have to be both the highest that the employee could find and also the lowest that the employer could find at any particular point in time. If workers were commodities, every small change to external or internal conditions would lead to recontracting, separation, or termination. This would create enormous uncertainty and disruption and insecurity for employer and employee. Both sides of the bargain thus seek ways to turn the market transaction into a long-term relationship. A secure long-term relationship can come either from commitment (emotional or financial) to the mission of the organization, or from jointly owned firm-specific assets.<sup>123</sup>
103. Firms attempt to create loyalty by getting buy-in to the firm's mission and by making the place of work as appealing as possible.<sup>124</sup> If these intangibles are insufficient, firms also have employee stock options (ESOPs) that give employees a stake in their firm.<sup>125</sup>
104. One foundation of employee loyalty is a feeling of fairness that can translate into a sharing of the rewards with more equality than a market might otherwise produce. "Equitable" compensation practices spread wage increases or reductions across broad categories of workers.<sup>126</sup> This implies that when

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<sup>123</sup> Becker, Gary, "Nobel Lecture: The Economic Way of Looking at Behavior," *The Journal of Political Economy*, Vol. 101, No.3 (June 1993), pp. 385-409.

<sup>125</sup> Oyer, Paul and Schaefer, Scott, "Why Do Some Firms Give Stock Options To All Employees?: An Empirical Examination of Alternative Theories," March 26, 2003.

<sup>126</sup> See e.g., Rees (1993) who describes the role of demand and the impact of market forces on salary structures of university faculty. (Rees, A. "The Role of Fairness in Wage Determination," *Journal of Labor Economics*, 1993, Vol. 11, No. 1, pt. 1.) See also, Mas, "Pay, Reference Points, and Police Performance," *The Quarterly Journal of Economics*, August 2006.

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outside opportunities put pressure at one point in the wage structure calling for higher wages for a few, firms tend to maintain the overall firm wage structure, rewarding everyone for the improved outside opportunities of some workers.<sup>127</sup>

105. To maintain loyalty, it is usually better for a firm to anticipate rather than to react to outside opportunities, since if a worker were to move to another firm at a much higher level of compensation, coworkers left behind might feel they have not been fairly compensated. That can have an adverse effect on worker loyalty, reducing productivity and increasing interest in employment elsewhere. To avoid this reduction in loyalty in the face of competition, firms may make preemptive improvements in their compensation packages.<sup>128</sup>
106. As discussed throughout this Report, Class-wide evidence is capable of showing that Cold-Calling--as well as just the threat of Cold-Calling--puts upward pressure on compensation. Economic theory describes factors that drive firms, like the Defendants, toward equitable pay practices that would be expected to spread the impact of an agreement to suppress Cold-Calling across all or almost all workers in a firm. Non-compete agreements allow firms to be more relaxed in maintaining competitive compensation packages because such agreements 1) suppress competition directly; 2) reduce the risk of employees becoming aware of pay practices elsewhere; and 3) otherwise eliminate competition for "passive" employees.

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[REDACTED]

[REDACTED]

[REDACTED]

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**1. Defendants' Internal Documents Constitute an Additional Form of Common Proof Capable of Showing that the Non-Compete Agreements Suppressed Compensation to All or Nearly All Members of the All-Employee Class and Technical Employee Class**

107.

[REDACTED]

108. Like Google and Apple during the conspiracy period,<sup>134</sup> Facebook was a premier destination for high-tech employees, and Facebook hired at a rapid pace. [REDACTED]  
[REDACTED]

---

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

<sup>134</sup> Google's global headcount went from approximately 3,000 employees prior to the start of the conspiracy to almost 20,000 by the end of 2009. Apple went from approximately 12,500 employees prior to the start of the conspiracy to approximately 37,000 by the end of 2009, as reported in 10-k filings.

[REDACTED]

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[REDACTED] Facebook  
solicited employees of Google.<sup>137</sup> [REDACTED]  
[REDACTED]

109. [REDACTED]

110. [REDACTED]  
[REDACTED]  
[REDACTED]

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[REDACTED]  
[REDACTED]  
■ [REDACTED]

<sup>137</sup> Facebook is estimated to have hired about 137 employees from Google by November 2010 Amir Efrati and Pui-Wing Tam "Google Battles to Keep Talent" Wall Street Journal, November 11, 2010, <http://online.wsj.com/article/SB10001424052748704804504575606871487743724.html>

■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]

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[REDACTED]

111.

[REDACTED]

112. This is an illustration of all three frameworks: (1) Price Discovery; (2) Equity and Loyalty; and (3) Firm-Specific Assets.

113. First, when employees discover information regarding their labor's value by receiving an offer from a competing employer, those employees use that information to negotiate higher salaries at their current employer, and so on, in an iterative process.

114.

[REDACTED]

---

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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[REDACTED]

115. [REDACTED]  
[REDACTED]  
[REDACTED]

116. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

117. [REDACTED]

118. [REDACTED]  
[REDACTED]

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[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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119. [REDACTED]

***2. Econometric and Statistical Analysis of Defendants' Compensation Data Is Also Capable of Demonstrating That the Compensation Suppressing Effects of the Non-Compete Agreements Would Be Broadly Experienced By Members of the All-Employee Class and Technical Employee Class***

120. A firm's commitment to principles of "internal equity" is evidenced by the imposition and maintenance of a somewhat rigid salary structure. What that means is that Cold-Calling and related practices would be expected to increase compensation across the board rather than be narrowly focused on the skills that are most in demand at any point in time.<sup>156</sup> As a result, analysis of the application of standard economic labor theory to this case constitutes common evidence bolstering Plaintiffs' proof that the Non-Compete Agreements would broadly affect members of the All-Employee Class and Technical Employee Class. [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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121. The Class-wide evidence I have reviewed and analyzed shows [REDACTED]

122. [REDACTED]

a. [REDACTED]

b. [REDACTED]

c. [REDACTED]

d. [REDACTED]

---

[REDACTED]

[REDACTED]

[REDACTED]

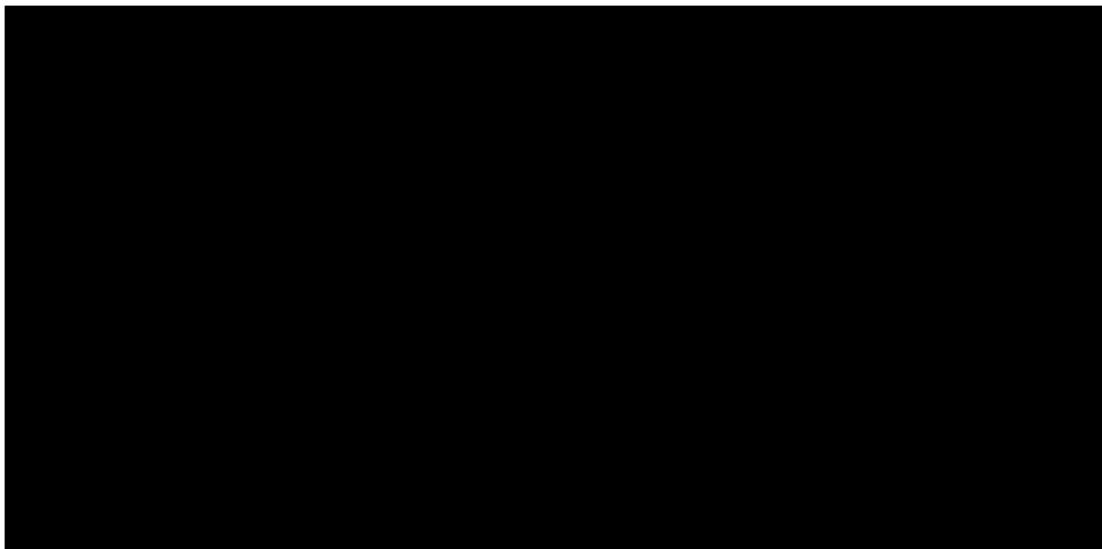
[REDACTED]

[REDACTED]

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123.



124.



125.



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[REDACTED] The ten percent increase in base salary *across the board* was said to "attract new recruits and preempt defections."<sup>166</sup>

"Reporting from San Francisco — Google Inc.'s decision to give all of its 23,300 employees a 10% pay raise next year — and a \$1,000 bonus to boot — is just the latest volley in what has become a full-fledged war for top Silicon Valley talent."<sup>167</sup>

126.

[REDACTED]

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<sup>166</sup> Amir Efrati and Pui-Wing Tam "Google Battles to Keep Talent" Wall Street Journal, November 11, 2010, <http://online.wsj.com/article/SB10001424052748704804504575606871487743724.html>

<sup>167</sup> Guynn, Jessica, "War heats up for top Silicon Valley talent," Los Angeles Times, November 10, 2010.

[REDACTED]

[REDACTED]

which he was present for December), would have five employee-years.

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[REDACTED]

127. [REDACTED]  
[REDACTED]

128. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] 170 [REDACTED]

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<sup>170</sup> These types of regressions can be found in many academic studies of wage structure. See e.g., Menezes-Filho, N. A., Muendler, M., and Garey Ramney. "The Structure of Worker Compensation in Brazil, With A Comparison To France And The United States." *The Review of Economics and Statistics*, May 2008, 90(2): 324-346.

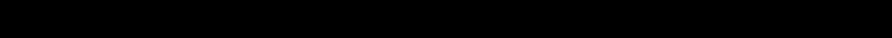
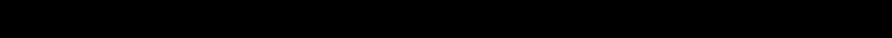
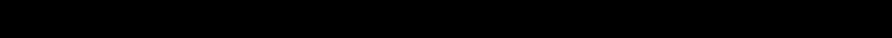
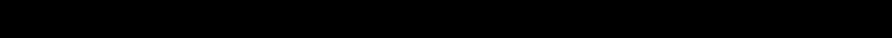
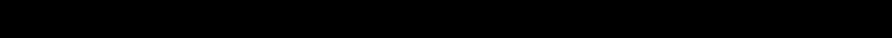
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129.	
	
	
	
	
	
	
	
	
	
130.	
	
	
	
	
	
	
	
	
	
	
	
	
	

■ the effects on compensation from the Non-Compete Agreements would be expected to be broadly experienced by all or nearly all members of the All-Employee Class and Technical Employee Class.

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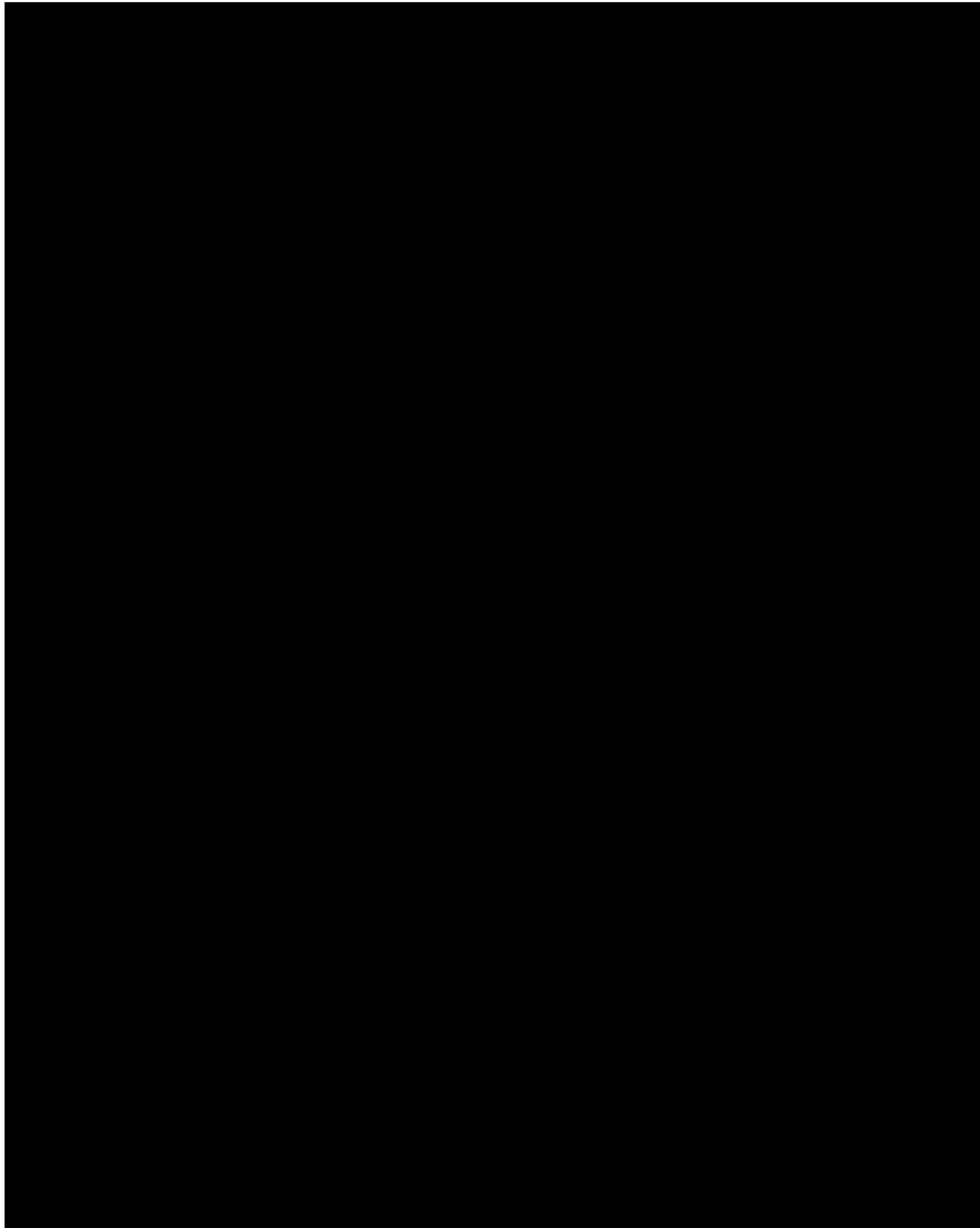
[REDACTED]

131. [REDACTED]

[REDACTED]

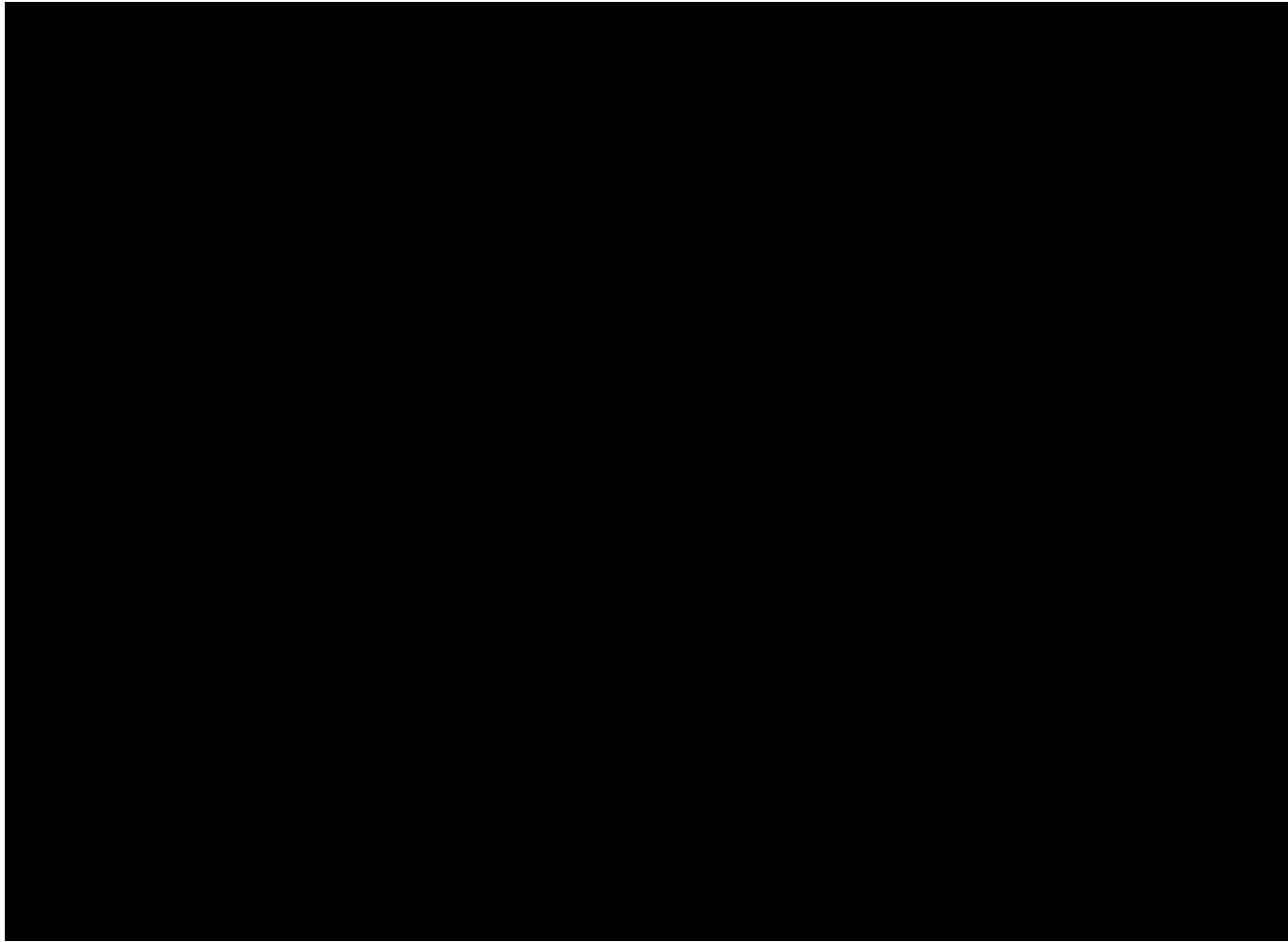
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132. [REDACTED]

[REDACTED]

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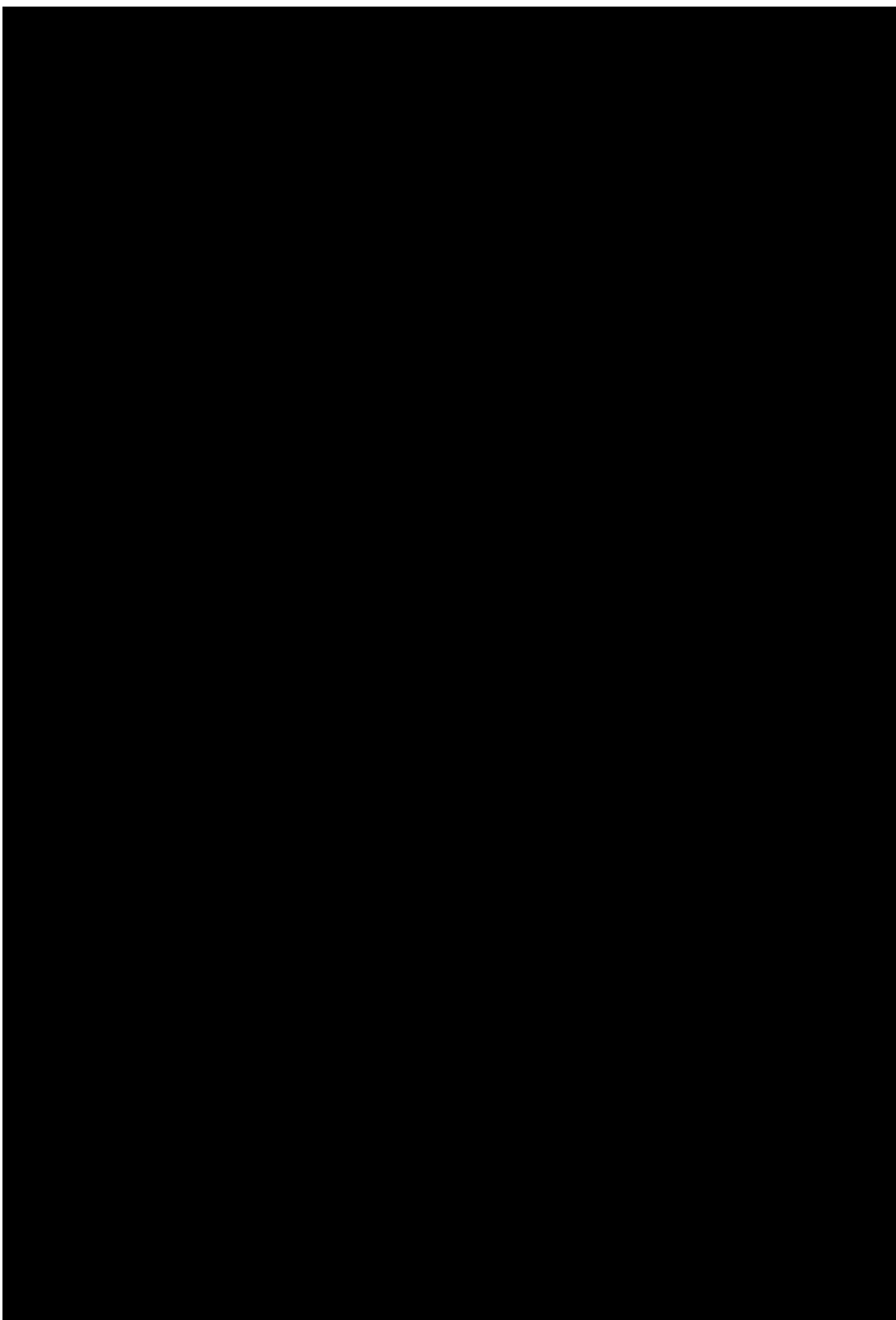
[REDACTED]

[REDACTED]

[REDACTED]

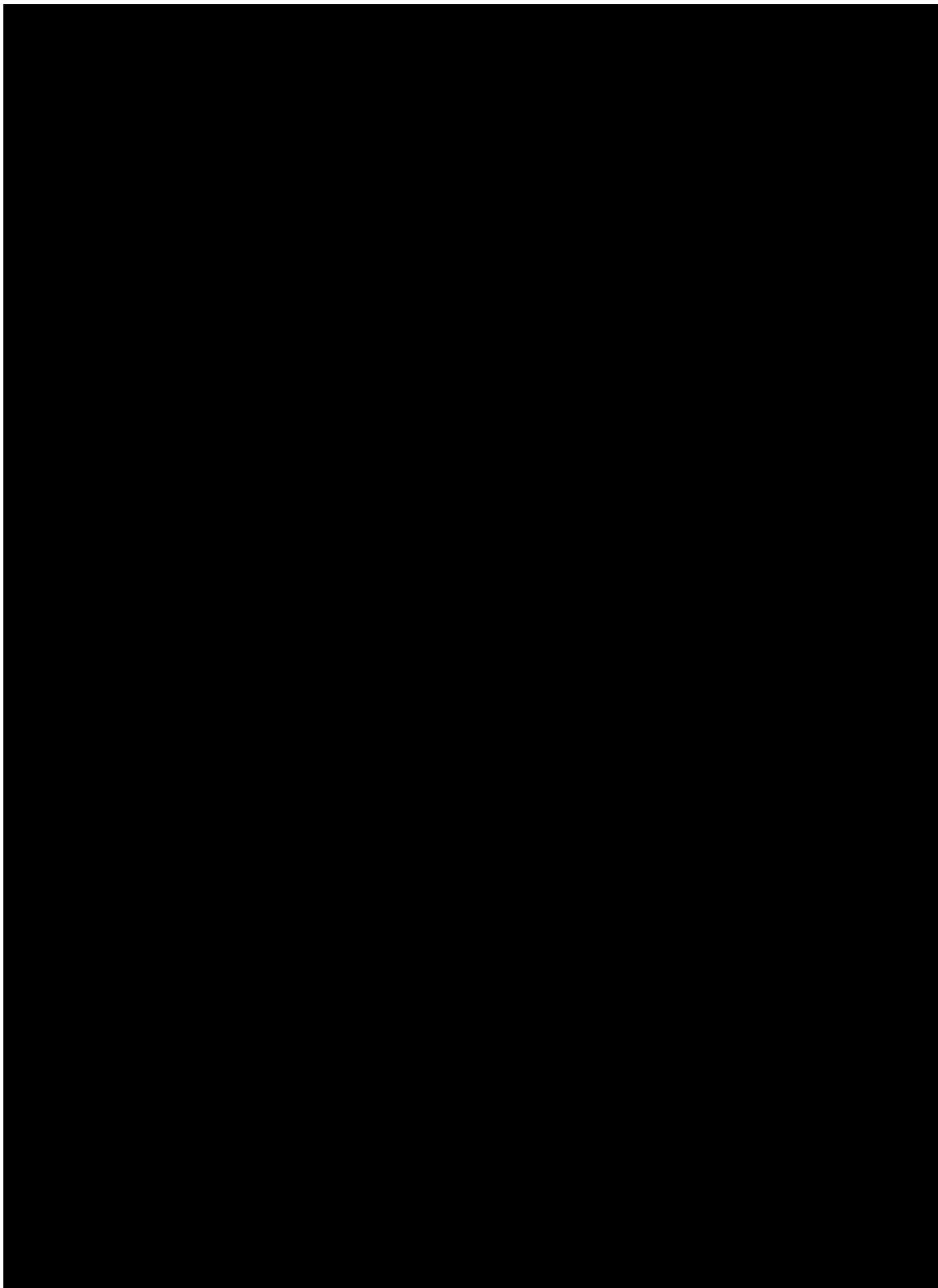
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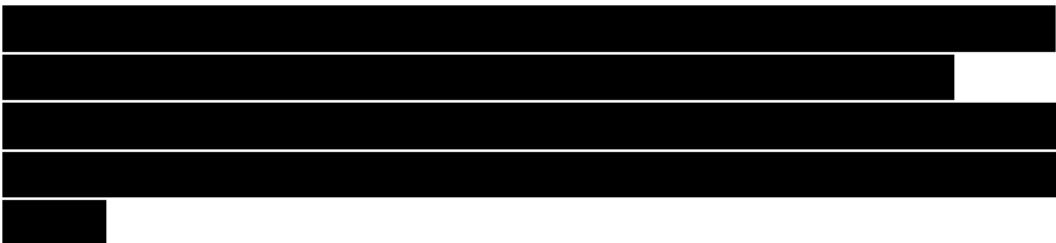
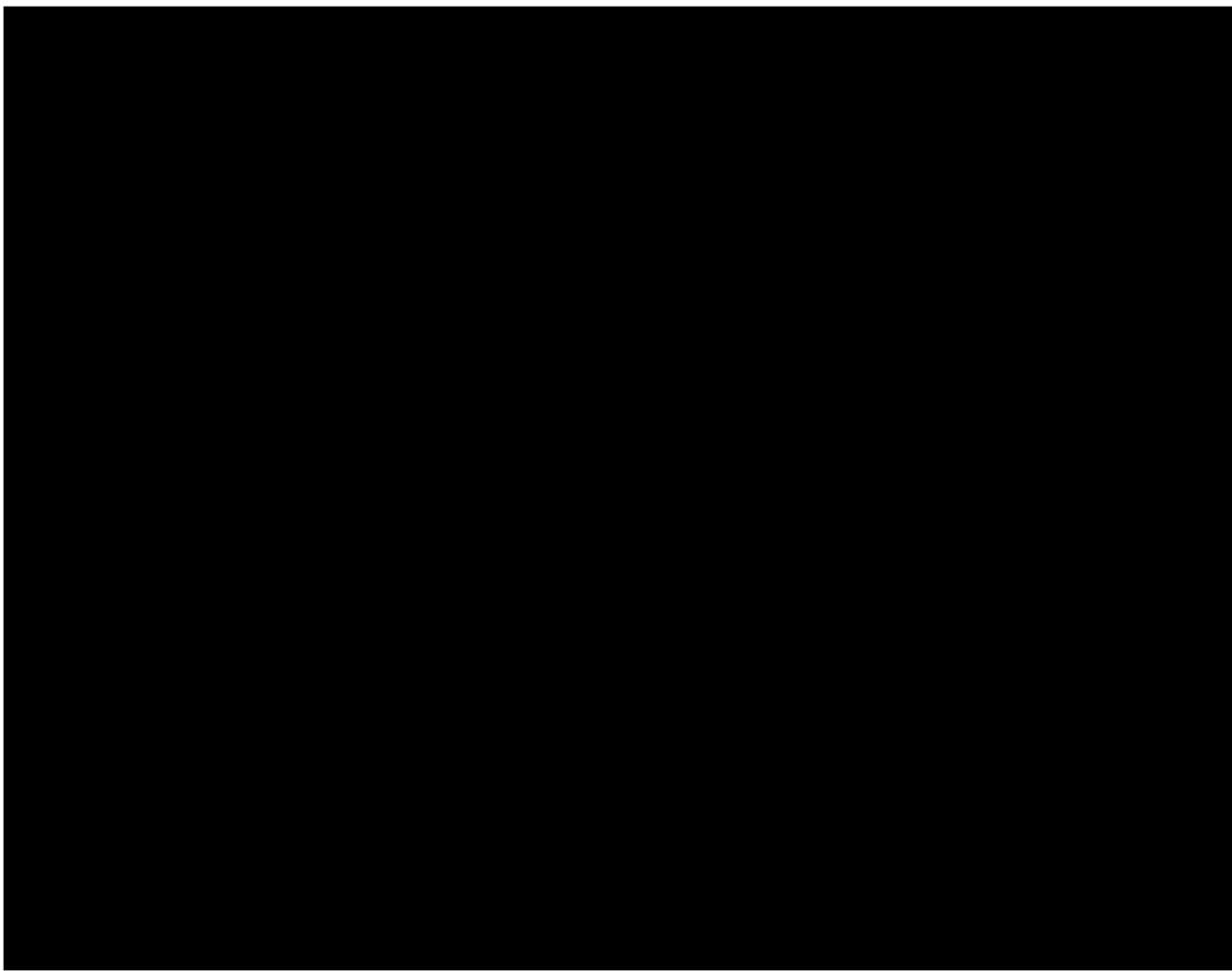
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133.

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134.

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**3. Standard Econometric Analysis Is Capable of Showing That the Non-Compete Agreements Artificially Suppressed Compensation to the Members of Each Class Generally**

135. I have concluded that standard forms of econometric analysis are capable of computing the aggregate amount of compensation suppression to the All-Employee Class and Technical Employee Class caused by the Non-Compete Agreements.

136. An estimate of the effect of the Non-Compete Agreements on employee compensation can be found by contrasting compensation during the periods when the Agreements were in effect with compensation before and after the Non-Compete Agreements.

137. A search for comparison periods needs to be sensitive to the economic cycle.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Roughly speaking, we can divide the 2001 to 2011 period as shown in Figure 18.

**Figure 18: Growth Cycle Periods for the U.S. Economy**

Period	Growth
(1)	(2)
2001	Mild US recession
2002 - 2003	Tepid recovery
2004 - 2005	Housing led growth
2006 - 2007	Weakening growth from weakening housing
2008 - 2009	Severe global recession
2010 - 2011	Tepid recovery

138. [REDACTED]

[REDACTED]

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139.

140. Before undertaking a formal regression analysis of damages,

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141.

142.

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143.

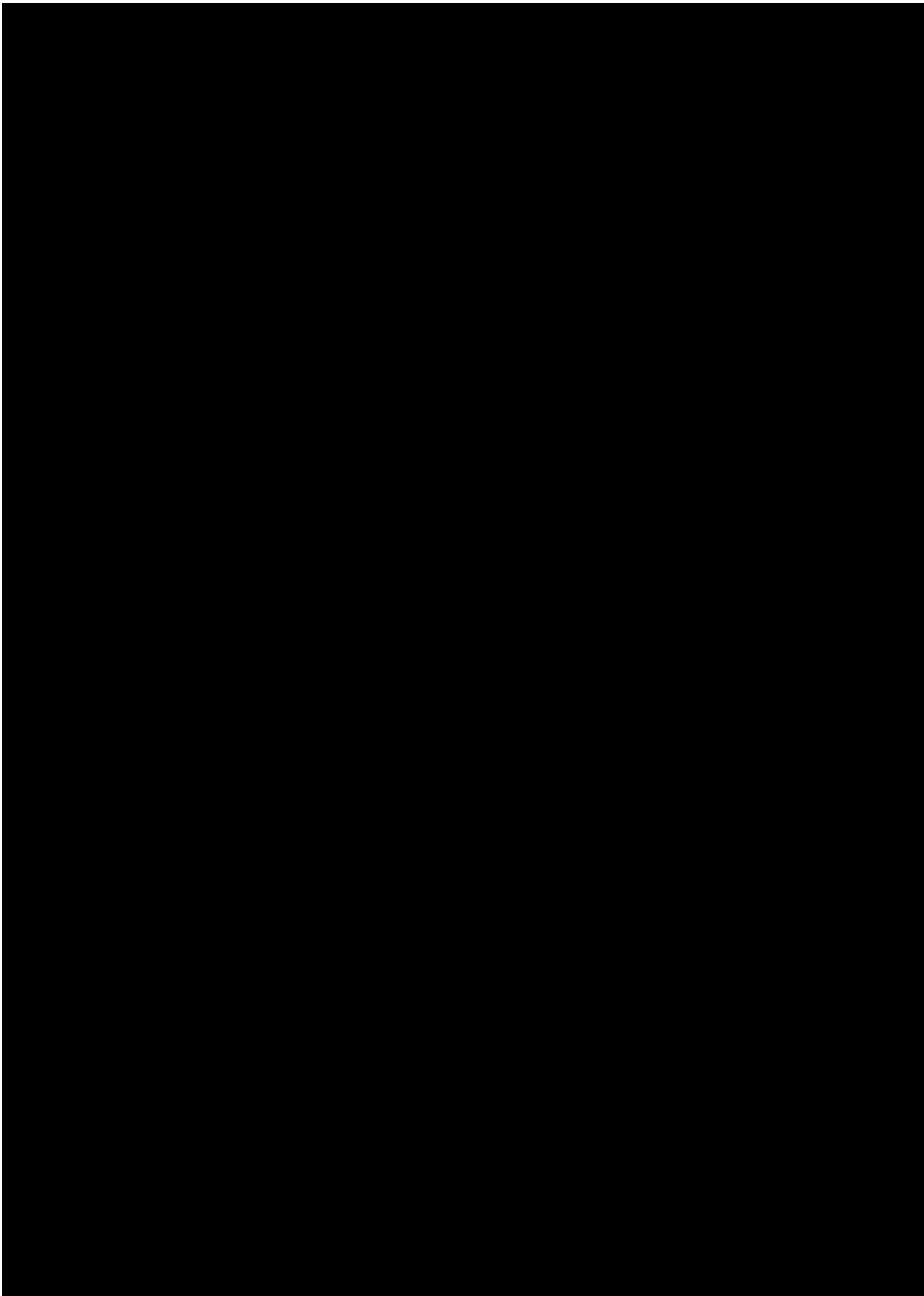
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145.

146.

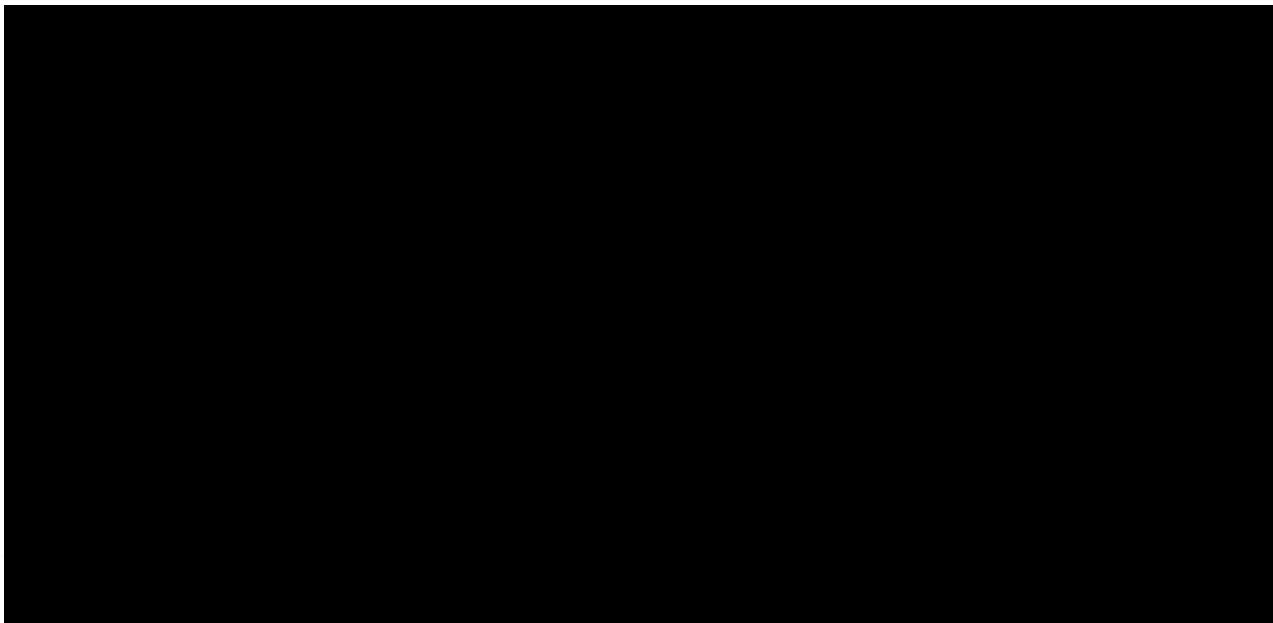
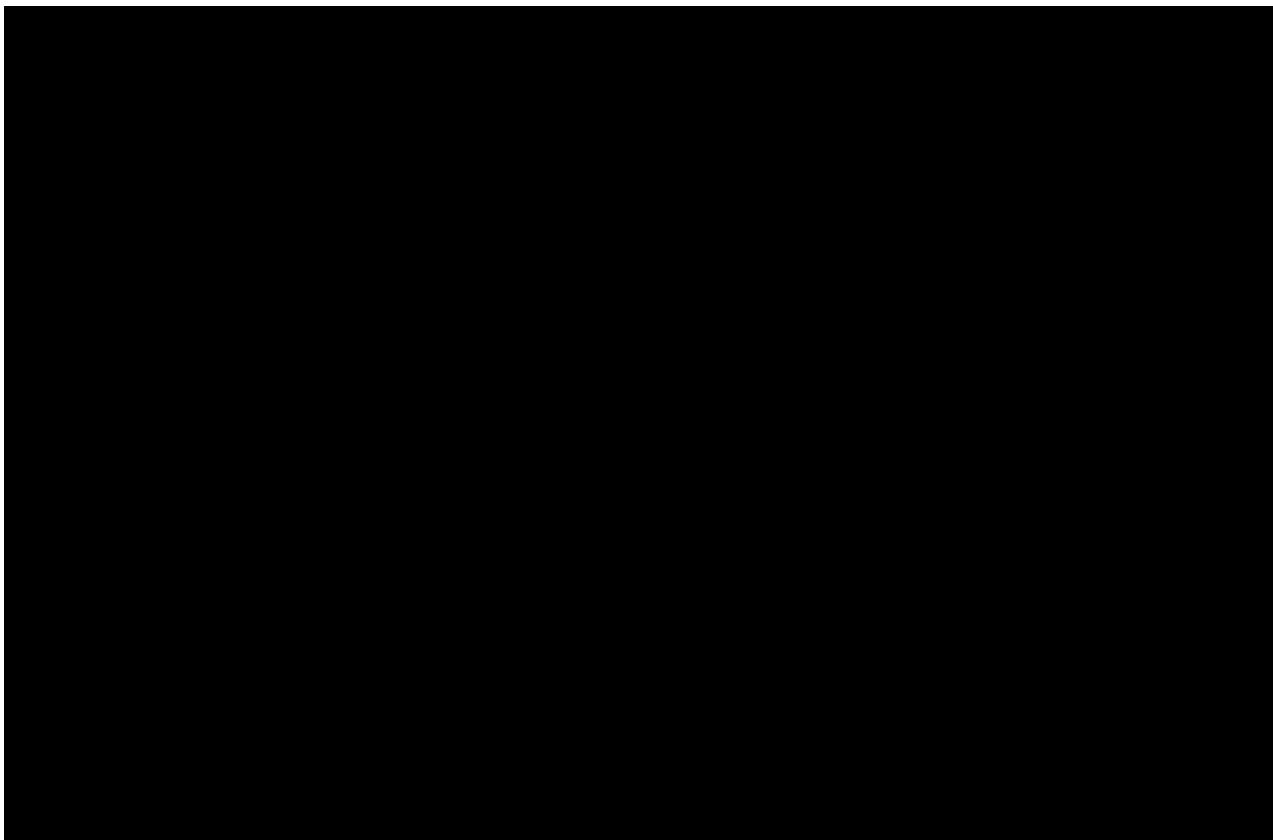
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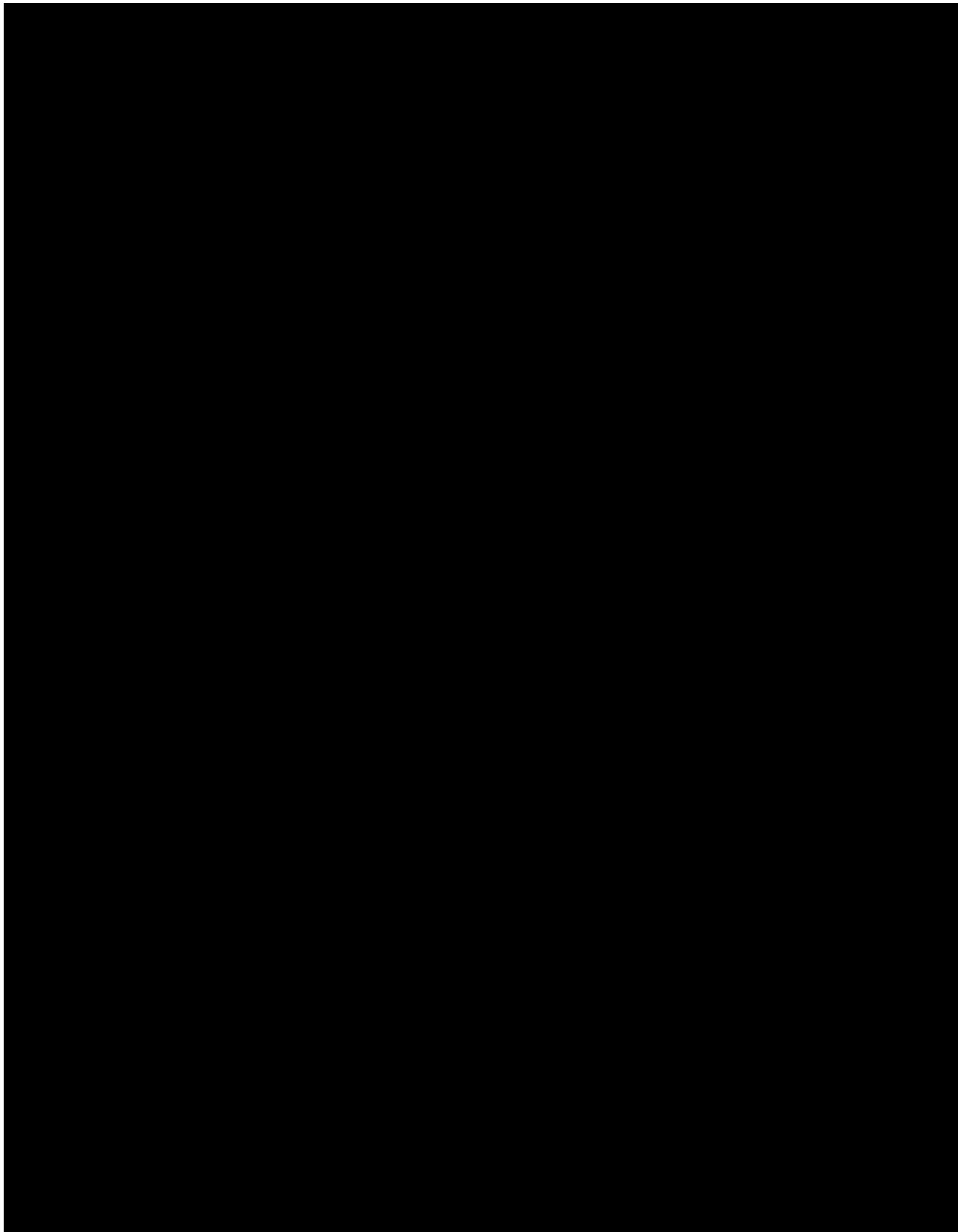
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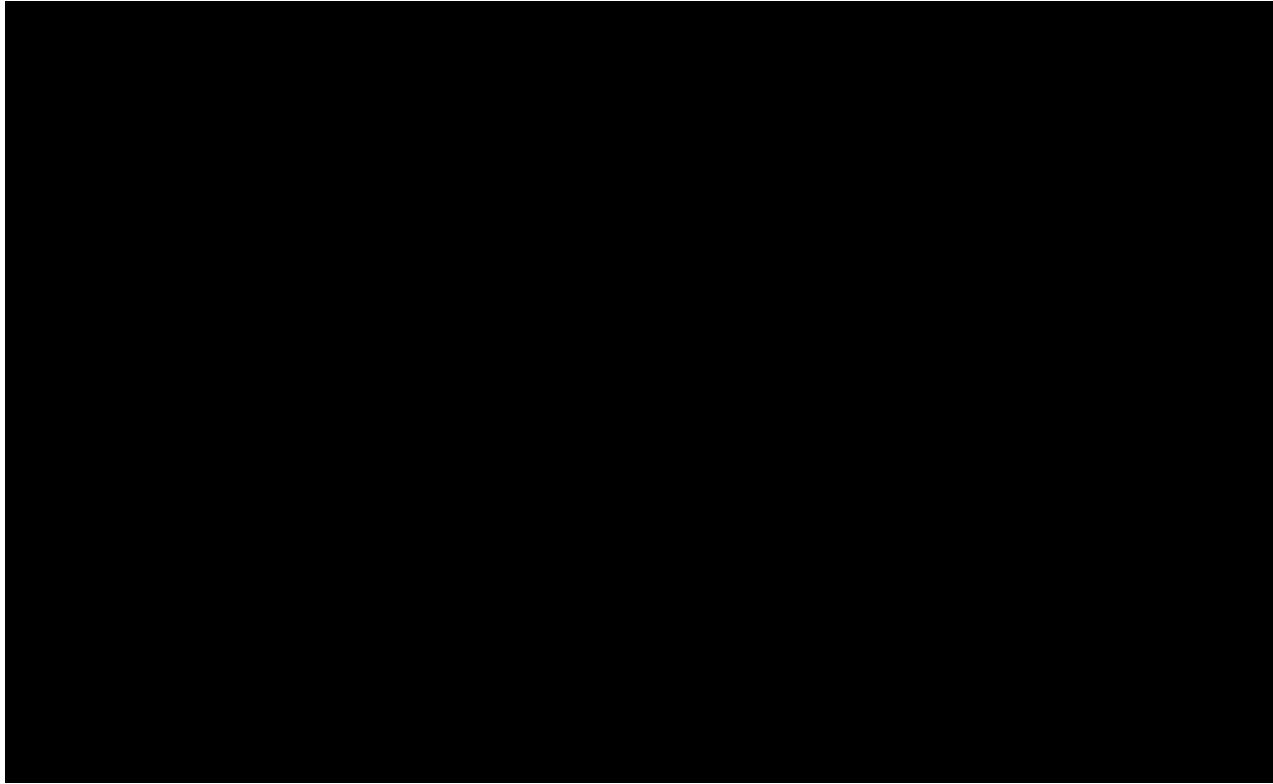
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147. I performed the same analysis for the set of employees in the Technical Employee Class. [REDACTED]  
[REDACTED]

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148. Accordingly the undercompensation figures resulting from the estimation of this econometric model of employee compensation [REDACTED] [REDACTED] can be used in a straightforward formulaic fashion in conjunction with the All-Employee Class and Technical Employee Class compensation data [REDACTED] to calculate damages for employees in either the All-Employee Class or the Technical Employee Class.

## **V. Conclusion**

149. I therefore conclude that common proof, in the form of documents, data, economic theory, and statistical methodologies, is capable of demonstrating that the Non-Compete Agreements artificially suppressed compensation of all or nearly all members of the All-Employee Class and Technical Employee Class. I conclude further that reliable econometric methods are capable of computing

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the total amount of salary suppression caused by the Non-Compete Agreements to Members of the All-Employee Class and Technical Employee Class .

  
Edward E. Leamer  
Edward E. Leamer, Ph.D.  
October 1, 2012

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## **APPENDIX A. Defendant Data Relied Upon**

### **A. Description of Data Requested and Produced**

150.



#### ***1. Employment Data***

151. Plaintiffs requested each defendant produce compensation histories for all salaried employees that were active during the period of January 1, 2001 through February 1, 2012. The information requested includes personal information (an encrypted social security number allowing employees to be matched across defendants, hire date, previous employer information, birth year, gender, education level, and channel of hiring) and on-going job information (job title and level, salary, bonus awards, benefits, stock option grants, office location, and manager ID). Additionally plaintiffs requested employee information that identifies drivers of compensation (information regarding changes in titles or jobs within a company) and exit information for employees that were terminated.

#### ***2. Recruiting Data***

152. Plaintiffs requested each defendant produced recruiting data for the period of January 1, 2001 through February 1, 2012. The information contained in the recruiting data should consist of application date, applicant's resume information (employer, job title, and education level), the source through which



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the application originated (cold called by recruiter, applied on website, etc.), and outcome (hired, rejected, etc.).

153. Additionally, plaintiffs requested that defendants provide detailed Cold-Calling data for the period of January 1, 2001 through February 1, 2012. The information contained in the Cold-Calling recruiting data should consist of a unique identifier for each candidate contacted, date of contact, and candidate's resume information (employer, job title, education level, experience), the source through which the application originated (cold called by recruiter, applied on website, etc.), and outcome (hired, rejected, etc.). [REDACTED]  
[REDACTED]  
[REDACTED]

#### **B. Datasets Created for Analysis**

154.



**APPENDIX B. Definition of the Technical Employee Class**

155. I was asked to identify employees that fit with in Technical Employee Class, defined to include all full-time salaried employees of Defendants during the period of the alleged agreements (see Figure 1) that worked in technical, creative, and research & development positions. The following job descriptions were included within this Technical Employee Class :

1. Software Engineers,
2. Hardware Engineers and Component Designers,
3. Application Developers,
4. Programmers,
5. Product Developers,
6. User Interface or User Experience Designers,
7. Quality Analysts,
8. Research and Development,
9. Animators, Digital Artists, Creative Directors and Technical Editors,
10. Graphic Designers and Graphic Artists,
11. Web developers,
12. IT professionals,
13. Systems engineers and administrators, and
14. Employees classified as technical professionals by their employers.

The Technical Employee Class does not include the following types of employees:

1. Non-technical employees (marketing, accounting, finance, operations, etc.)
2. Senior executives,

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3. Non-US employees,
4. Network administrators,
5. Systems support/maintenance personnel,
6. Facilities maintenance employees, or
7. Manufacturing technicians.

156. [REDACTED]

[REDACTED]

[REDACTED]

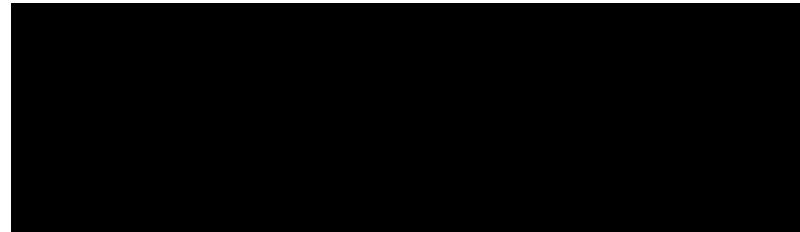
[REDACTED]

157. There are additional Technical Employee Class members who fall under other categories. Additional criteria were taken to select class titles:

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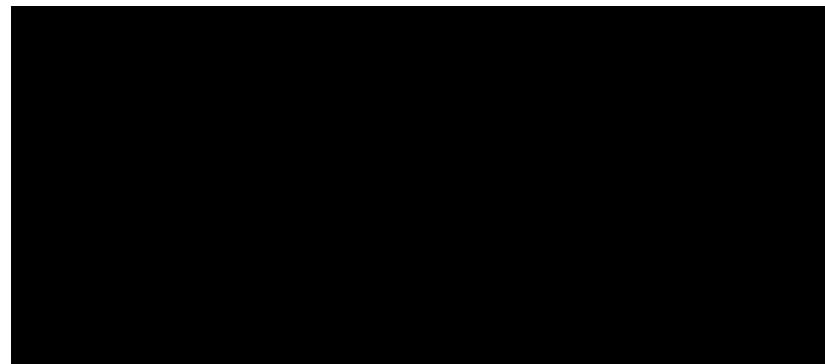
a. Adobe



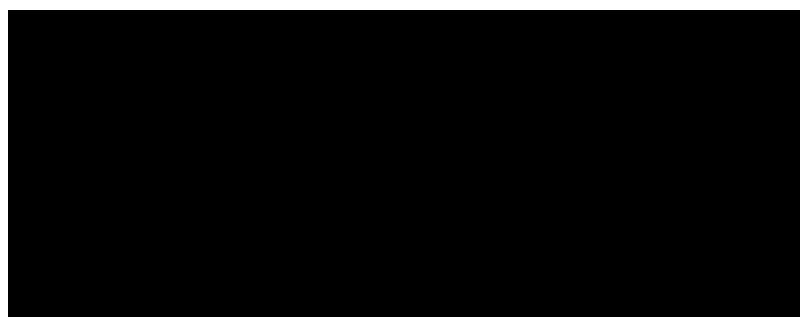
b. Apple



c. Google



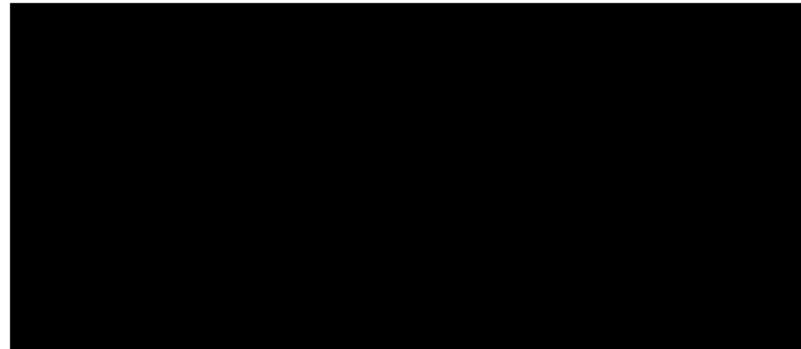
d. Intel



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e. Intuit



f. Lucasfilm and Pixar

